Seventh Biennial Report

OF THE

State Board of Health

OF

MONTANA

FOURTH BIENNIAL REPORT

OF THE

State Registrar of Births and Deaths

1913 and 1914

W. F. COGSWELL, M. D., Secretary

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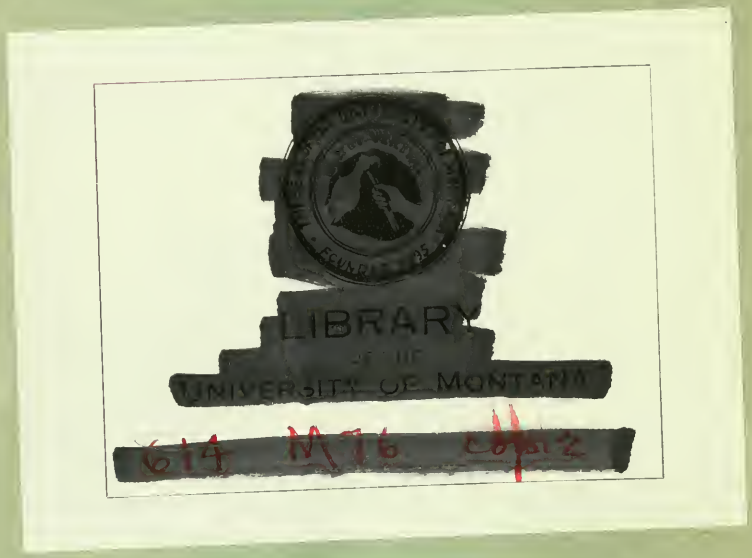

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MEMBERSHIP OF THE MONTANA STATE BOARD OF HEALTH.

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W. F. Cogswell, M. D., Secretary, Helena.

DEPARTMENT OF PUBLIC HEALTH OF THE STATE OF MONTANA.

OFFICE OF THE SECRETARY,
Helena, Montana, November 21st, 1914.

Hon. Samuel V. Stewart, Governor,
Helena, Montana.

Sir:—In compliance with the provisions of the laws of the State of Montana, I hand you herewith the Seventh Biennial Report of the State Board of Health of Montana.

I wish to take this opportunity of paying a tribute to the work of my predecessor. Doctor T. D. Tuttle was a pioneer in health work in Montana. Through his tireless energies a foundation was laid upon which we hope a public health system will be constructed second to none in the country.

I also wish to express my appreciation of the hearty co-operation and support given me by the local and county health officers throughout the State.

Respectfully submitted,
W. F. COGSWELL,
Secretary.

CONTENTS.

RECOMMENDATIONS

Local and County Health Officers.

The present system of employing local and county health officers is far from satisfactory. On account of this system our local and county health officers are continually changing. In order that this department may do efficient work we must have some say in the appointment of these officers, and they must be appointed for a longer period than they are at present. If it were possible to divide the state into districts and have a health officer appointed for each district, who would devote his whole time to health work, the efficiency of this department would be greatly increased.

Pure Food Law.

We recommend that the law relative to the granting of licenses to hotels, restaurants, meat markets, slaughter houses, confectioneries and bake shops be so changed that it require the party applying for a license to give satisfactory evidence that his place of business is in a sanitary condition. As the law now stands it is necessary for this department to grant a license to any one applying for it, even though we know that his place of business is in a grossly insanitary condition.

We also recommend that a fee of one dollar be charged for such license.

Dairy Inspection.

The last session of the legislature created the office of Dairy Commissioner. The law gives the dairy commissioner two deputies and expects him to make inspections of the dairies throughout the state. It can be readily seen that proper inspection is a physical impossibility.

By an arrangement with the dairy commissioner and this department, the State Board of Health continued to inspect dairies retailing milk, while the dairy commissioner confined his energies to the inspection of dairies selling cream and butter. We believe that the inspection of dairies rightly is the work of the dairy commissioner. But as a large percentage of the intestinal diseases in children is due to milk contaminated by improper handling, we do not feel justified in retiring from

the field of dairy inspection without a protest, unless another department is given an adequate force to make an efficient dairy inspection. It is immaterial to us under what department the dairy inspection is made so long as we get the desired results.

We recommend that the dairy commissioner be given at least two deputies who will confine their energies to the improvement of dairies retailing milk. We believe that dairy inspection should be largely educational, and should be in the hands of men, who, not only are acquainted with the details of the dairy business, but who are also practical sanitarians.

Air Space in Hotels, Boarding Houses.

We wish to endorse the recommendation made by Dr. T. D. Tuttle in the Sixth Biennial Report of the State Board of Health, viz:

"As a result of a limited study of the sanitary conditions in the mines and on the surface, in Silver Bow County, we found in over five hundred houses examined that the air space in rented sleeping rooms is three hundred and twenty-five (325) cubic feet per individual occupying the rooms. In one instance the air space was reduced as low as one hundred (100) cubic feet per occupant. This condition exists to some extent in other parts of the State.

We therefore recommend an Act of Legislature prohibiting the renting of rooms for sleeping purposes in which the air space is less than six hundred and fifty (650) cubic feet per occupant."

Tuberculosis Sanitorium.

The Tuberculosis Sanitorium for the construction of which twenty thousand ($20.000) dollars was appropriated by the legislature in 1911, is far too small to accommodate the number of tubercular cases wishing sanitorium treatment. We recommend that money be appropriated to enlarge this institution so as to meet the increased demands of the state.

We also recommend that an appropriation be made for educational purposes along the lines of prevention and cure of tuberculosis.

COMMUNICABLE DISEASES

There has been a marked increase in the number of cases of smallpox, diphtheria, scarlet fever and measles in 1913 and 1914 over the number occurring in 1912. This we believe is due, not to inefficient local and county health officers, but to the fact that epidemics of these diseases occur in cycles more or less regularly.

Smallpox.

During the year 1912, there were 245 cases of smallpox reported, with three deaths; during 1913 there were 725 cases with two deaths. The cases as a rule have been absurdly mild, and on this account extremely hard to handle. On outbreaks of smallpox occurring in Great Falls, Lewistown, Bridger, Hamilton, Big Timber, Billings, Butte and in some rural districts, orders were issued by the State Board of Health to the School Boards of these districts requiring children attending school to present certificates of successful vaccination. This order in several of the places mentioned met with considerable resistance. At Lewistown one parent sought to enjoin the school board from enforcing this order, claiming that the law giving the State Board of Health power to issue such an order was unconstitutional. This was argued before the district court in Fergus County and Judge Ayres rendered a decision upholding the constitutionality of the law and holding that the State Board of Health was quite within its jurisdiction in issuing such an order.

We believe that a law should be passed requiring all children on entering school for the first time to present certificates of successful vaccination.

Measles.

The regulations relative to measles were modified at a meeting of the State Board of Health held October 1, 1914, to read as follows:

Regulation 14. Any local or county health officer having knowledge of, or having reason to suspect the presence of measles in his district, shall, if necessary, make investigation and place under quarantine all persons found to be suffering with this disease.

Period of Quarantine. The quarantine for measles shall be two weeks from the beginning of the disease, and longer, if in the opinion of the health officer, it is necessary to prevent the spread of the disease.

Children from a house which has been quarantined for measles, who have not had the disease, shall not be allowed to attend school or any public gatherings.

Before quarantine is raised the room or rooms which have been occupied by the patient, must be thoroughly aired and cleaned and all clothing and bedding used by the patient must be exposed in the open air for at least two hours.

Scarlet Fever.

The number of cases of scarlet fever reported in 1912 was four hundred and sixty-five (465); in 1913 nine hundred (900); and for the first nine months in 1914, five hundred forty (540). The number of deaths in 1912 was twenty-five (25); and the number of deaths in 1913 was eighty-two (82).

In the past the length of time of quarantine was left to the judgment of the local and county health officers in each individual case. At the meeting of the State Board of Health October 1st, 1914, the time for quarantine was set in every case for not less than twenty-eight (28) days, and as much longer as is deemed necessary by the local or county health officer.

Diphtheria.

The number of cases of diphtheria reported in 1912 was one hundred thirty-eight, with eleven deaths; the number of cases in 1913 was one hundred thirty-eight with seventeen deaths.

As antitoxin is a positive cure for this disease, when administered early, and as this agent is rather expensive, we believe that the county commissioners in each county should make proper arrangements with their county physician whereby this remedy may be furnished free to the people who are unable to bear the expense.

Whooping Cough.

At a meeting of the State Board of Health, April 3rd, 1913, the following rules and regulations relative to whooping cough were adopted:

Regulation 1. When a case of whooping cough is reported to the local or county health officer, he must placard the house in which such case occurs with a card bearing the words, "Whooping Cough Here," in letters not less than six inches high, and he must notify occupants of such house that no person suffering from whooping cough shall be allowed to attend school, church, or other public gathering, nor shall such a person be allowed to enter a railway car or other public conveyance until such time as the local, county or State health officer shall determine that the case is no longer capable of transmitting the disease.

Regulation 2. No milk can be sold from a dairy on whose premises a case of whooping cough exists unless such case is isolated in a manner meeting with the approval of the local, county or state health officer.

Cerebro Spinal Meningitis.

At a meeting of the State Board of Health, April 2, 1913, the following regulations were passed:

Reg. 1. Houses in which a case of cerebro spinal meningitis occurs must be placarded by the local or county health officer, thus "Cerebro Spinal Meningitis Here" in letters not less than six inches high.

Reg. 2. Cases of cerebro spinal meningitis must be isolated as thoroughly as possible.

Reg. 3. On recovery or death of such cases, rooms in which cases were confined must be disinfected in the manner prescribed by the State Board of Health.

Trachoma.

At a meeting held July 14, 1913, on authority vested in it by the legislature of 1913, the State Board of Health designated trachoma as a communicable disease. This disease is more or less prevalent amongst the Indians on the reservation.

Complaint was made to this department from the town of Poplar to the effect that there were many breed children attending the public schools at that place suffering from trachoma. On receiving this complaint we wrote to the Department of Interior requesting the services of a physician, skilled in the diagnosis of trachoma, to make an examination of the children at that place. The Department responded very

promptly to this request. Dr. C. H. Dewey was detailed to make this investigation, and we herewith give in full his report as to conditions found.

		Percentage
Normal	56	.523
Trachoma	16	.15
Suspicious	12	.112
Folicular Conjunctivitis	19	.117
Acute Conjunctivitis	4	.038
Total Examination	107	.100%

Acting by authority of Regulation 23 of the State Board of Health, the children suffering from the disease were excluded from attending school. The suspicious cases were temporarily excluded from school and put on treatment. We believe that those counties bordering on the reservations should have their school children examined for trachoma, and it is the wish of this Department that this examination be undertaken as soon as possible.

Spotted Fever.

At the 1913 session of the legislature a law was passed creating the Board of Entomology for the purpose of handling the spotted fever situation in the Bitter Root Valley. This Board will make a report of its work under another cover. We herewith quote in full the law creating this Board:

"Sec. 1. There is hereby created the Montana State Board of Entomology, which shall be composed of the State Entomologist, the Secretary of the State Board of Health, and the State Veterinarian.

"Sec. 2. The Secretary of the State Board of Health shall be Chairman of said Board and the State Entomologist shall be Secretary.

"Sec. 3. None of the members of said Board shall receive any compensation other than that already allowed by law except that the actual expenses of members while engaged in the duties incident to the work of said board shall be paid out of the appropriation made to carry on the work of said Board.

"Sec. 4. It shall be the duty of said Board to investigate and study the dissemination by insects of diseases among persons and animals, said investigation having for its purpose the eradication and prevention of such diseases.

"Sec. 5. Said Board shall take steps to eradicate and prevent the spread of Rocky Mountain tick fever, infantile paralysis and all other infectious or communicable diseases that may be transmitted or carried by insects.

"Sec. 6. Said Board shall have authority to make and prescribe rules and regulations including the right of quarantine over persons and animals in any district of infection and shall have the right to designate and prescribe the treatment for domestic animals to prevent the spread of such diseases; but said Board shall not have the right to prescribe or regulate the treatment given to any person suffering from any infectious or communicable disease.

"Sec. 7. All rules and regulations of the State Board of Entomology shall be subject to approval by the State Board of Health.

"Sec. 8. The Board shall publish in printed form all rules and regulations which shall be adopted by said Board for the eradication and control of disease of any kind and such rules and regulations shall be circulated among the residents of every district affected thereby.

"Sec. 9. Any person who shall violate any of the rules or regulations of the State Board of Entomology shall be deemed guilty of a misdemeanor and upon conviction thereof shall be fined in any sum not in excess of one hundred ($100) dollars, or by imprisonment in the county jail for any period not exceeding thirty (30) days or by both such fine and imprisonment.

"Sec. 10. There is hereby appropriated out of any moneys in the State Treasury not otherwise appropriated the sum of five thousand ($5,000) dollars, or so much thereof as may be necessary to carry on the work of the State Board of Entomology for the year 1913, and the sum of five thousand ($5,000) dollars, or so much thereof as may be necessary to carry on the work of said Board for the year 1914. Said money to be expended under the direction and approval of the State Board of Examiners."

Poliomyelitis (Infantile Paralysis).

At a meeting of the State Board of Health, April 3rd, 1913, the following rules and regulations, relative to poliomyelitis, were adopted:

Regulation 1. Patients suffering from poliomyelitis must be isolated as thoroughly as possible and room in which patient is confined must be thoroughly screened against flies.

Regulation 2. The house in which a patient suffering from poliomyelitis is confined must be placarded by the health officer, thus "Poliomyelitis Here," in letters not less than six inches high.

Tuberculosis.

At the 1913 session of the legislature Section 1500 of the Public Health laws was so amended as to include tuberculosis, whooping cough and anterior poliomyelitis among the list of communicable diseases which are required to be reported. The same amendment gave the State Board of Health authority to add to this list any diseases which it might at any time deem proper. This law went into effect February 13, 1913.

During the remainder of the year 1913, there were one hundred twenty-four (124) cases of tuberculosis reported; during the first nine months of 1914 there were one hundred seventy-one (171) cases reported. We feel certain that this number does not represent all the cases of tuberculosis in the State. We are confident that we are not getting full reports of our tuberculosis cases. The number of deaths from tuberculosis in 1912 was four hundred seventy-two (472); in 1913 the number of deaths was three hundred eighty-five (385). Unless this Department can make use of reports of tuberculosis other than merely compiling statistics, we feel that the doctors have but little encouragement to report their cases.

We hope to be able in the future to effect an organization whereby all cases of tuberculosis, which are reported to this office, will be supplied with literature instructing them how to live in order that a cure may be affected, and what precautions are necessary to prevent the spread of the disease. In order that this may be done, the State should appropriate money to carry on an educational campaign against this disease.

The State Tuberculosis Sanitorium has done excellent work considering the class of patients that they have been treating at that institution. Too many of the cases sent there have been past all hope of cure. A large percent of those sent in the incipient stage of the disease have improved or completely recovered, but their cure has been retarded by the depressing effects of having to associate with the incurable.

We believe that provision should be made for the enlargement of this institution in such a way that the incurable be entirely separated from the incipient cases.

At the meeting of the State Board of Health held April 2, 1913, the following regulations relative to tuberculosis were passed:

Reg. 1. Care of Tuberculosis in Hospitals. All hospitals accepting for treatment or care any person suffering from tuberculosis shall provide separate quarters, rooms or wards for such cases, and such quarters, rooms or wards shall not be used for the treatment or care of persons not afflicted with tuberculosis.

Reg. 2. Where tuberculosis patients are committed to any County Hospital or County Poor Farm provisions for their care must be provided as required for hospitals, as in Regulation 1.

Reg. 3. All sputum must be received in a sputum cup that can be burned, or in napkins. All cups must be removed at least three times in twenty-four hours and as much oftener as may be necessary. Immediately after changing the sputum cup, or napkins, they must be burned.

Reg. 4. All surgical dressings removed from a tuberculous lesion must be immediately burned.

Reg. 5. In hospitals or other institutions of a public character where persons suffering from tuberculosis are received for care or treatment separate bedding, towels, dishes and nappery must be provided for such persons, and all such bedding, towels, etc., must at all times be kept entirely separate from those provided for other persons.

Reg. 6. When any dwelling is vacated after having been occupied by any persons known to have been suffering from tuberculosis, such dwelling shall be thoroughly disinfected in the manner prescribed by the State Board of Health for all other communicable diseases, except that the time the house shall remain closed for the action of formaldehyde gas shall be eight hours instead of four.

Reg. 7. When any room or compartment in any hotel, lodging house or apartment house has been occupied by any person known to have been suffering from tuberculosis, such room or apartment, upon being vacated, shall be thoroughly disinfected in manner prescribed in Regulation 6.

Typhoid Fever.

The number of cases of typhoid fever reported in 1912 was three hundred eight (308); the number reported in 1913 was five hundred sixty-two (562); and the number reported during the first nine months of 1914 was three hundred twenty-four (324). In this disease we believe that the apparent increase in the number of cases is due more to the fact that we are getting better reports rather than that there were a larger number of actual cases.

A special blank for reporting this disease has been furnished to health officers with the request that they be sent into this office as soon as the disease is diagnosed. We believe that in most instances the health officers have complied with this request.

In April, 1913, an epidemic of typhoid fever occurred in Little Chicago, a suburb of Great Falls. Thirty-five cases occurred within a few weeks. As soon as the State Board of Health was notified of this epidemic, an investigation was made and it was found that Little Chicago pumped its water from the Missouri River, about one and one-half miles below the point where the sewage of Great Falls entered the river. A hypochlorite treating plant was at once installed and the epidemic immediately subsided.

In January, 1914, a typhoid epidemic occurred in Chinook, due to a similar cause. The city of Havre disposes of its sewage in the Milk River, and twenty-five miles below Chinook takes its water from this river. At this place a hypochlorite treating plant was installed, but on account of the very muddy condition of Milk River, it was not expected that this plant would be completely satisfactory and an order was issued to the Mayor of the town to take steps to put in a filtration plant at that place. This order was complied with, and a filtration plant is being constructed which it is expected will render the muddy water clear, and the hypochlorite treatment will still be continued.

During the spring of 1914, quite a number of cases of typhoid fever occurred among railroad men running on the Great Northern Railway between Clancy and Great Falls. On investigating the water supply at Clancy, it was found that the tank water at that place was being used for drinking purposes by the men, and was also being used at the lunch counter. The

water supplying this tank was supposed to be pumped from a well situated near Prickly Pear Creek. As a matter of fact the water in the well was not sufficient to supply the tank and a pipe had been laid to a ditch, whose waters came directly from Prickly Pear Creek. One mile above, the hotels of Alhambra and Sunnyside emptied sewage from their septic tanks into the Prickly Pear Creek. An analysis of this water showed marked contamination.

The attention of the Division Superintendent was called to this condition, and after considerable trouble orders were issued by him to the men, warning them against drinking this water. The stand that we took at that time was that the railway company was duty bound to furnish their men with pure drinking water; that in order to do this they should equip their engines with fixed water containers; that every engine leaving the round house should be supplied with pure drinking water, and that places should be indicated along the line where these containers could be refilled. This was the stand that we took at a meeting of the Northwestern Sanitation Association held at St. Paul in July. At that meeting representatives from the Northern Pacific, the Burlington, Great Northern, and Milwaukee Railways were present.

Previous to this meeting we had samples taken from the water tanks on the Great Northern Railway from Mondak to Cut Bank, a distance of 415 miles. Of twenty-six such samples, thirteen were found to be contaminated and we were informed by the inspector, who took the samples, that four of the contaminated waters were being used for drinking purposes. Previous to that meeting we did not have the co-operation of the railroad in question. Since then we have had its hearty co-operation in health matters.

Many of our cases of typhoid fever have come from the rural districts, and their origin has been traced to water from irrigating ditches. While it is possible for cities and towns, taking their water from streams, which are liable to contamination, to so treat this water as to render it sterile and harmless, it is not feasible to treat water in irrigating ditches; and it seems almost impossible to keep men from drinking water from these ditches. This fact emphasizes the importance of keeping our streams as pure as possible.

SEWAGE DISPOSAL.

On account of the amendment which was made in 1911 to our law against the pollution of streams, before we can compel a city, which is already disposing of its raw sewage into a stream, to install a sewage treating plant, we have got to show that this sewage has caused disease further down the stream. This, as can readily be seen, is almost impossible to do.

But the law requires that all towns constructing a new sewage system must submit their plans to the State Board of Health for its approval, and the position of this Board is, that no sewage system will be approved which does not call for sewage treatment.

One of the big problems before the Board at the present time is, what system of sewage treatment is most efficient and economical for this State. The State Board of Health acting in conjunction with the City of Bozeman, and the college at that place, has constructed an experimental sewage disposal plant at Bozeman. The results of these experiments will be published as soon as completed. We wish to express our appreciation of the manner in which the city of Bozeman and the college have co-operated with us in this matter. The State Board of Health bore the expense of constructing the plant. The city of Bozeman is bearing the expense of running this plant, and the college is doing the analytical work.

A regulation of the Public Health Service requires certificates of purity from the state or municipal health authorities on all waters used in passenger coaches in interstate traffic. To meet this requirement entailed a large amount of extra work for this department, but we have been able to make the analyses, and in many instances a sanitary survey of the water supplies. Certificates have been delayed where the waters were found to be contaminated or liable to contamination, from conditions easily remedied, until such conditions were remedied. In several instances certificates were refused on account of insanitary conditions surrounding the water supply.

Of the latter instances, the most marked examples is the water supplied to passenger trains at Great Falls and Billings. At these places the water is being treated by hypochlorite; but when these treating plants were installed it was understood that they were but temporary, and that the water would only

be certified to in these cities, when permanent purifying plants were installed. At Billings plans were well advanced towards securing an excellent filtration system.

In order to handle the water question efficiently in this State, we should have an assistant analyst, whom we could send to different localities, in the State, to make, not only a sanitary survey of the water supplies, but to make preliminary tests in the field. The distances are so great in this State that it is almost impossible to get a satisfacory sample of water to the laboratory from remote parts.

A very complete report of the activities of this department relative to our water supplies will be found in the Laboratory Report of Prof. W. M. Cobleigh, to whose energies we owe much.

The following plans for water systems and sewer systems have been approved by the State Board of Health:

Columbus Water System, March, 1914.
Cut Bank Water System, May, 1914.
Malta Water System, May, 1914.
Lewistown 16" Gravity Line, June, 1914.
Chester Water System, June, 1914.
Billings Filtration Plant, August, 1914.

Plans for water system at Hardin are at present being considered.

White Sulphur Springs Sewer System, May, 1914.
Malta Sewer System, May, 1914.
Ft. Benton Sewer System, May, 1914.
Havre Sewer System, July, 1914.
Havre Disposal Plant, July, 1914.

Regulations for the guidance of engineers in submitting their plans for water supplies and sewer systems were passed at a meeting of the State Board of Health, April 2, 1914. These regulations in full will be found on page 22 of this report.

RAILWAY SANITATION.

As a rule we have had the hearty co-operation of the railway companies in carrying out our sanitary regulations. The regulations of the Northwestern Sanitation Association, relative to railway sanitation, were adopted by the State Board of Health at a meeting held April 2, 1913. These will be found on page 33 of this report.

We recommend that the railway companies adopt on their passenger coaches a water cooler constructed so that the ice does not come in direct contact with the water. We also recommend that provisions should be made for the frequent sterilization by steam of these water coolers.

CONSTRUCTION CAMP SANITATION.

On another page of this report will be found regulations and suggestions, relative to sanitation in construction camps, adopted by this Department at the April 2, 1913, meeting of the State Board of Health.

During the summer of 1914 we were able, through a special inspector, who was paid by the State Board of Entomology, to make sanitary inspections of the construction camps in this State, and we believe that the sanitary conditions in and around these camps have been very much improved. This officer made one hundred and eleven special inspections and reported regularly to the State Board of Health, as well as to the Board of Entomology. A copy of the score card adopted by the State Board of Health and used for reporting these inspections is as follows:

SCORE CARD.

Construction Camps.

Name of Contractor .....
Location of Camp .....
Classification of Camp .....
1. Number of men employed.....
2. Is the camp in a sanitary location?.....
3. Are there swamps, natural sink holes or pools of water near camp?.....How many?.....
4. Condition of kitchen.....(Good (Fair (Bad
5. Are kitchen and dining room well screened?.....
6. Are kitchen and dining room properly located with regard to bunk houses, stables and toilets?.....
7. Are the proper kind of toilets provided?.....
8. Distance of toilets from kitchen.....
9. Is quicklime or disinfectant used in toilets?.....
10. Do men use toilets provided for them?.....

11. Is garbage and refuse disposed of daily?.....
12. Are garbage cans provided for the camp?.....
13. Is there a garbage collector employed?.....
14. Is storeroom in a sanitary condition?.....
15. How far is manure removed from the stables?.....
    Distance from kitchen.....
16. Source of water supply.....
    Is there any reason to suspect contamination of water supply? .....
17. Are the proper provisions made for sick and disabled employes? .....
18. Name camp physician .....
19. Are any persons engaged in the handling of food stuffs, who have suffered from typhoid fever within recent years? .....
20. No. of cases of sickness occurring within past month.....
    No. of cases of infectious diseases.....
21. Is bedding properly aired and kept clean?.....
22. Do fly maggots occur in any kind of refuse about camp? .....Kind of refuse.....

SCHOOL ARCHITECTURE.

We herewith publish that part of the General School Law passed by the last legislature which refers to school architecture:

"Sec. 1601. No school house shall hereafter be erected, repaired, or enlarged in any school district of the State at an expense which shall exceed Five Hundred ($500.00) Dollars, until the plans and specifications thereof shall have been submitted to the State Board of Health, and its approval endorsed thereon; Provided, that districts of the second and third class shall also have the approval of the Superintendent of Public instruction. Such plans and specifications shall show in detail the ventilation, the heating and lighting of such building.

"Sec. 1602. The Board of Health shall not approve plans for the erection of any school building or addition thereto or remodeling thereof, unless the same shall provide, (a) at least fifteen square feet of floor space and two hundred cubic feet of air space for each pupil to be accommodated in each study or recitation room therein; (b) at least thirty cubic feet of pure air per minute per pupil shall be furnished by a satisfactory

ventilating system, which should also provide means for exhausting the foul or vitiating air from the room.

The light shall come from the left or from the left and rear of each school room, and the window space shall be not less than one-seventh of the floor space of each room.

"Sec. 1603. The County Treasurer shall not make any payments on any contract arising under the provisions of this chapter until the contractor furnishes a certified statement signed by the State Board of Health that the plans and specifications of the school building to be erected or remodeled, have been fully approved by the State Board of Health.

"Sec. 1604. It shall be the duty of the State Board of Health to furnish to all districts of the third class suggestive plans for school buildings to be erected in conformity with the above rules.

"Sec. 1605. No one and two room school houses shall be erected without a vestibule of reasonable size.

"Sec. 1606. It shall be the duty of boards of trustees in districts of the third class to require that the school room or rooms shall be thoroughly scrubbed and cleaned, including the floors, interior wood work and windows, at least once every three months.

"Sec. 1607. The board of trustees shall furnish such water supply and toilet accommodations as shall be approved by the State Board of Health."

This law puts a great deal of extra work on the Health Department without providing us with any additional funds to carry on the work. However, through the good offices of a local architect, we have been able to meet the requirements of the law, and the following table gives some indication of the work done:

From May 1, 1913, to December 31, 1913.

Plans examined, approved and filed	45
Rural School Plans examined and approved	35
Blue Prints furnished to Rural Districts	119
Total	199

From January 1, 1914, to October 30, 1914.

Plans examined, approved and filed	47
Rural School Plans examined and approved	54
Blue Prints furnished to Rural Districts	136
Total	237

We had blue prints of a model one room school house prepared, and furnished them free to any school board requesting them. The plans for this school building followed very closely those prepared by the Smith Heating System.

While the law requires that the Board of Health pass on plans and specifications of all school houses to be constructed in the State, we have no means of ascertaining whether or not the plans have been adhered to by the contractor. We believe that some method should be devised for the inspection of school buildings when completed, to see if the plans as submitted to the State Board of Health have been carried out.

JAILS.

In addition to his many other duties, it is required of the Secretary of the State Board of Health that he make an inspection of all public institutions at least once a year.

As a result of the inspection of jails, three were found to be grossly insanitary and were promptly condemned. Two of the condemned buildings have been discarded and new jails constructed. An extension of time was granted the authorities in one case.

The law requires that men conducting a business shall observe the sanitary laws of the State, and we believe that any business or institution conducted by the State, City or County should be conducted so as not to violate any of the State laws.

LICENSED EMBALMERS.

During the years 1913-1914 there have been issued from this office forty-seven embalmers' licenses. These licenses have been issued after an examination, or upon the applicant presenting a certificate that he holds a license and is in good standing in a state with which we reciprocate in embalmers' licenses. At the present time the examination is conducted by the Secretary of tthe State Board of Health. We believe, however, that two licensed embalmers should be appointed, who, acting with the Secretary, would constitute a Board of Examiners; this Board to conduct examinations and make rules and regulations, to submit to the State Board of Health, regulating the practice of embalming in this State.

BACTERIOLOGICAL LABORATORY

The bacteriological laboratory under the direction of Dr. Emil Starz is becoming increasingly popular with the physicians throughout the State, as indicated by the numberr of bacteriological specimens which are being sent to the laboratory. Physicians throughout the State can have specimens examined free of charge.

This laboratory should be enlarged and the scope of its field widened. We hope that steps will be taken to bring this about.

REGULATIONS COVERING THE PREPARATION AND SUBMISSION OF PLANS FOR WATER SUPPLIES AND SEWERAGE SYSTEMS.

Submission of Plans (1).

Plans shall be submitted to the Board of Health of the State of Montana for examination at least two weeks prior to the date upon which action by the board is desired. From this it is not to be inferred that action by the board will be always taken within the time mentioned.

Information Required (2).

The plans for a complete water-supply and water-purification system shall consist of the following parts: A general plan of the municipality or district, showing the proposed system; detailed drawings showing construction of any special structures in the distribution system; general and detailed plans for the water purification works; a comprehensive report upon the proposed system by the designing or consulting engineer. This report to be typewritten upon letter-size paper, and the sheets firmly bound together. A preliminary report, containing data and information sufficient for the complete understanding of the project may be submitted to the State Board of Health for its consideration prior to the submission of detailed plans.

General Plan (3a).

The general map referred to in paragraph 2 shall be drawn to a scale of not greater than 100 nor less than 600 ft. to 1 in.; and covering the entire area of the municipality or district to be supplied with water, and shall accompany each

application in the case of a new water system, or any extension or modification of any water supply or water purification system, unless such a general plan of the entire area has been previously submitted.

If the municipality is greater than 2 miles in length, the map may be divided into sections, conforming in size to those mentioned in Section 7 of these rules. The sheets shall be bound together and a small index map supplied, showing by number the area covered by the various sheets.

Details of Map (3b).

This map shall show all existing or proposed streets, the surface elevations of all street intersections, and the elevations of the principal parts of the water system, such as water at the intake, in the reservoir or standpipe, etc., (or a 1-ft. to 10 ft. internal contour map, according to the topography of the ground). The map should show that water-supply facilities can be provided for all sections of the municipality or district, even though the construction of pipe lines in some of the streets is to be indefinitely deferred. The location of intakes, valves, hydrants, reservoirs, pumps, standpipes and purification plant, and any special structures, shall be shown and referenced in a legend near the title. The size of pipes shall be written between the street lines and along the pipe. The map shall also show the true or magnetic meridian, title, scale, date, the municipal or district boundaries, the mean low and high-water elevations of water at the intake. If the site of the pumping plant is subject to flooding, the elevation of the highest known water must be given.

Lettering, Lines and Symbols (3c).

Letters and figures shall be clearly and distinctly made. Pipe lines to be built at present shall be shown by solid lines and those to be later constructed shown by broken lines. All topographical symbols used are to be the same as those used by the U. S. Geological Survey.

Elevations (3d).

The elevations of the street intersections shall be placed outside the street lines in the upper right-hand angle or opposite their respective positions in the street.

Detail Drawings (3e).

Detail drawings of all special appurtenances, such as blow-offs, siphons, intakes, conduits, reservoirs, collecting galleries, filters, etc., shall be submitted. (3f). Profiles of long conduits or pipe lines may be plotted to a convenient scale and shown on sheets of the size mentioned below.

Purification Works: General Plans (4).

The plans for the purification works shall consist of a general plan upon which reserve areas of future extensions must be shown and also the general layout of the various units of the process, together with the piping system.

Detail Drawings.

The detail drawings shall include longitudinal and transverse sections sufficient to show the construction of each unit and part of the plant. They shall also show the distributing, drainage and cleansing systems, general arrangement of any automatic devices, sizes of depth of stone, gravel or sand used for filtering material, and such other information as is required for the intelligent understanding of the plans.

Drawings (5).

All drawings submitted shall be plainly and neatly executed and may be traced directly on tracing cloth, printed on transparent cloth or printed on any of the various papers which give distinct lines.

Size of Drawings.

The following dimensions are suggested for ordinary use, with the exception of the general map: Distance from top to bottom, 20 to 30 in., length, 24 in., 32 in., 40 in., or 48 in., or thereabouts. By this section it is intended to prevent the use of unnecessarily long or large maps, which are difficult to file or to use.

Title.

Each drawing shall have legibly printed thereon the name of the municipality or person for whom the drawings are made, the name of the engineer in charge, the date, the scale, and such references in the title as are necessary for the complete understanding of each drawing.

Engineer's Report (6).

A report written by the designing or consulting engineer, shall be presented with all plans for complete system, and

shall give all data upon which the design is based or which is required for the complete understanding of the plans.

When a purification or treatment plant is to be constructed, a measuring device shall be provided at some convenient point, and the installation of a recording device is recommended, and in particular instances may be required.

Map of Watershed.

A small scale Map of the Catchment area shall be furnished, compiled from actual surveys if such have been made, or from Maps of the Geological Surveys if such have been extended over the country, otherwise, from the best data obtainable. Such Map should show the relative locations of towns, villages, mines or other settlements which may affect the sanitary condition of the watershed or the future quality of the water supply. Other features which should be discussed in connection therewith are the storage capacity, average depth and area of any storage reservoir located thereon, together with the general character of the water to be furnished, having particular reference to hardness, taste, color, and odor if there be any, and any further characteristics which the water proposed to be used may show.

Wells and Collecting Galleries.

If the water supply is to be taken from wells, describe the number, depth, size and construction of the same; method of pumping, capacity of pumps, kind of strainer used, nature of ground through which wells will be driven, and probable flow of the wells.

If collecting galleries are to be used, describe their construction. In addition to this there must be a map showing the location, and extent of the ground that is controlled by the municipality or company making the development and the nearest source or sources of possible certain water shown thereon.

Information Concerning Purification Plant.

The following information is required respecting the purification plant: The method of purification and a description of the units of the system; the rate of operation of each of the systems; the rate of operation of each unit of the plant; if any chemicals are used, the nature and quality of each with a description of the appliances for adding the same to the water,

a description of all conditions peculiarly characteristic of the water or locality which in any manner affects the design or operation of the system; a description of all special appliances used, any special methods of maintenance or operation of the plant, and the extent of purification expected or guaranteed.

If for purposes of fire protection it is necessary to provide by-passes, by which partly treated or raw water can be turned into the mains, they shall have valves upon them of such a character that they may be properly sealed by the State Board of Health.

The report shall further include a description of the nature and extent of the area to which it is proposed to supply water, or which will ultimately be supplied from the system, the quantity of water to be served, the portion of the system to be constructed at present and the minimum depth of pipe below the surface of the ground. A description of any provision for future units of pumping plans, filters, etc., should be given.

Unsupplied Districts.

Should there be areas in the municipality or district which on account of topography or for other reasons cannot be supplied with water, a definite statement to this effect must be made and the probable future supply of this omitted territory should be discussed.

Specifications (7).

Specifications and an estimate of the cost for the construction of water supply and water purification systems shall accompany all plans for new or original systems. With plans for extensions of existing systems or plans, specifications may be omitted, provided that these extensions are to be constructed in accordance with specifications filed with the original plan.

Extension of Present System (8).

If the plans are solely for the extensions of the existing system, only such information as is necessary for the comprehension of the plans will be required. This information shall, in general, conform to the above requirements for a complete system.

General Requirements—Application for Approval (9).

The application for approval of plans shall be made by the proper municipal authorities, persons for whom the work is

to be done, or their properly authorized agents, upon blank forms, which will be supplied by the board.

Deviation from Approved Plans.

No deviation from approved plans shall be made unless amended plans, showing such proposed changes, have been submitted to and approved by the board (unless these changes do not affect the efficiency or the public health).

Samples of Water to be Aanalyzed.

The board will collect and analyze samples from all public water supplies at regular intervals. Requests for the analysis of special samples should be made to the board in writing, as samples will not ordinarily be examined unless collected by representatives of the Board; (except that the Board will allow samples to be taken, in the manner provided by the Board, by authority of the city councils of the various cities, of the waters supplying such cities, and will analyze the same as expediously as the exigencies of the case may demand, and forward copies of the analyses of such samples to the city council requesting the same).

REGULATIONS GOVERNING PREPARATION AND SUBMISSION OF DESIGNS FOR SEWER SYSTEMS AND TREATMENT WORKS.

SEWERS AND SEWAGE TREATMENT.

Submission of Plans (1).

Plans shall be submitted to the board for examination at least two weeks prior to the date upon which action by the board is desired. From this it is not to be inferred that action by board will always be taken within the time mentioned.

Information Required (2).

The plans for a complete sewerage and sewage disposal system shall include the following: A general map of the municipality of sewerage district; profiles of all sewers proposed; details of construction of manholes, flush tanks, and special structures pertaining to the sewers; general and detailed plans for disposal works; a comprehensive report upon the proposed system by the designing or consulting engineer, to be written upon letter size paper, and the sheets firmly

bound together; a preliminary report, containing data and information sufficient for the complete understanding of the project may be submitted to the State Board of Health for their consideration, prior to the submission of detailed plans.

Map or General Plan (3a).

The general plan referred to in paragraph 2 shall be drawn to a scale not greater than 100 nor less than 600 ft. to 1 in.; and shall show the entire area of the municipality or district. If the municipality is greater than 2 miles in length the map may be divided into sections, conforming in size to those mentioned in section 7 of these rules. The sheets shall be bound together and a small index map supplied, showing by number the area covered by the various sheets. A general plan shall accompany each application, in the case of a new sewer system, or any extension or modification of any existing sewer system, unless such general plan has already been submitted.

Details of Map (3b).

The plan shall show all existing or proposed streets, (streets, either in existence or proposed, where sewers are to be located), the surface elevations at all street intersections, the contour lines at intervals of not more than 10 feet.

If it is intended to defer the construction of sewers in some of the streets, the plan shall show that sewerage facilities are provided for all such sections of the municipality or sewerage district. The plans shall also clearly show the location of all existing and proposed sewer outlets or overflows. The true or magnetic meridian, the town or township lines, title, date, scale, direction of flow and average water elevation of the stream shall also be clearly shown. The elevation of the highest known freshets at the outlet and site of the disposal plant shall be given. Any area from which sewage is to be pumped shall be shown by light shading, coloring or other distinctive marks.

Lettering and Symbols (3c).

Letters and figures shall be clearly and distinctly made. Sewers to be built at present shall be shown by solid lines, and sewers to be constructed later shall be shown by a line of dashes as — — — — —. Existing sanitary sewers shall be shown by the following symbol, ..., and combined sewers, by a dot and dash, .— .— .— .— .— .— .— All topo-

graphical symbols used are to be the same as those of the U. S. Geological Survey.

Elevations (3d).

Elevations of the surface of the streets should be placed outside the street lines in the upper right angle, or opposite their respective positions in the street. The elevations of sewer inverts should be shown at street (or alley) intersections (as the case may be), end of line, and wherever a change of grade occurs. The elevations of the sewer shall be written close to the point to which they refer, parallel with the sewer line between the street (or alley) lines. The elevations of surface shall be shown to the nearest 0.1 ft.; those of the sewer inverts to the nearest 0.01 ft. The sizes and gradients of all proposed and existing sewers shall be marked along the line of the sewer.

Profiles (4).

Profiles of all sewers over 8 inches in diameter and of all 8-inch sewers, where gradients less than that given below are used, shall accompany the application, (excepting in cases where construction is to be a continuation of a 6-inch pipe already laid.) Profiles of all sewers must be approved before they are constructed. Profiles of all sewer lines shall be prepared and drawn to such a scale as to clearly show the structural features of the sewer. For ordinary use, the following scales are suggested: Vertically, 10 ft. to 1 inch.; horizontally, 100 ft. to 1 in. Both scales must be clearly shown upon each sheet. Upon these profiles shall be shown all man-holes, flush-tanks, lamp-holes, siphons and stream crossings, with elevations of stream bed and normal water. Figures showing the size of gradients of sewers, surface elevations, sewer inverts, etc., should be shown with the same frequency as required for the map.

Grades, Etc.

The following gradients for sewers flowing half full are suggested as minimum grades for ordinary use, as with careful construction a theoretical velocity of approximately 2 feet per second can be obtained:

Size of pipe	Fall in ft. per 100 ft. of sewer.
8-inch,	0.40 ft.
10-inch,	0.29 ft.
12-inch,	0.22 ft.
15-inch	0.16 ft.
18-inch,	0.12 ft.
20-inch	0.10 ft.
24-inch,	0.08 ft.

The sewers should have a capacity when flowing half full sufficient to carry twice the future average flow twenty-five years hence, plus a sufficient allowance for ground water infiltration. When grades lower than those given are used, an explanation and reasons for the use of such grades should be included in the engineer's report. On each sheet of profiles must be given, under the title, an index of the streets appearing on that sheet. Profile sheets shall be numbered consecutively.

Detail Plans (5).

Detail drawings of sewer sections except where terra cotta or iron pipe is used, and of all sewer appurtenances, such as man-holes, lamp-holes, flush tanks, inspection chambers, siphons and any special structures, shall accompany the general sewer plans. The detail plans shall be drawn to such a scale as to show suitably and clearly the nature of the design and all details, such as man-hole frames and covers, iron pipes, valves, gates, etc.

Disposal Works (6).

The plans for the disposal works shall include a general plan upon which reserve areas or future extensions are clearly shown, and detail plans of the various units and structures which comprise the plant. A weir or other measuring device shall be provided at some convenient point, and the installation of a recording device is recommended, and in particular instances may be required.

Detail Plans.

The detail plans shall show longitudinal and transverse sections sufficient to explain the construction of each unit. They should also show the distributing and drainage systems,

general arrangement of any automatic devices, sizes of stone, gravel or sand used as filtering material, and such other information as is required for the intelligent understanding of the plans.

Drawings (7).

All drawings submitted shall be neatly and plainly executed and may be traced directly on tracing cloth, printed on transparent cloth, or printed on any of the various papers which give distinct lines. All prints shall be clear and legible.

Size of Drawings.

With the exception of the map, the following dimensions are suggested for ordinary use: Distance from top to bottom, 20 or 30 in.; length, 24 in., 32 in., 40 in., or 48 in., or thereabouts. By this section it is intended to prevent the use of long profiles and unnecessary large maps, which are difficult to file or to use.

Title.

Each drawing shall have legibly printed thereon the name of the town or persons for whom the drawing is made, the name of the engineer in charge, the date, the scale and such reference in the titles as are necessary for the complete understanding of each drawing.

Engineer's Report (8).

A report, written by the designing or consulting engineer, should accompany all plans for complete sewerage systems, and shall give all data upon which the design is based, such as:

Information Concerning Sewer Systems: (a) nature and extent of the area which it is proposed to include within the present system of sewerage, and the area which it is planned shall ultimately drain into this system. (b) The population to be served, both present and estimated for twenty-five years hence. (c) The estimated per capita daily flow of sewage to be cared for. (d) The total and per capita water consumption of the town at the present time. (e) The allowance made for leakage into the sewers. (f) The estimated daily flow of sewage, including leakage. (g) The character of the sewage (whether domestic or including manufacturing wastes, and in the case of the latter, the nature and approximate quantity of the same stated in specific terms.) (h) Method of flushing or periodically cleaning the sewers. (i) That portion

of the sewers to be built at the present time. (j) The minimum grades of sewers for each size used. (k) If there are sections which cannot drain into this system, the extent of such sections and the probable future disposition of the sewage from these sections. (l) Distance of sewer outlet from shore and depth of water at outlet, if outfall discharges into a large stream.

A list of bench marks or fixed elevations should be included in this report.

Information Concerning Disposal Plant: With regard to the disposal plant, the engineer's report shall cover the following subjects:

(a) The method of disposal to be adopted and a description of the units of the system. (b) The rate of working of each unit. (c) If disinfectant is to be used, the name of the disinfecting substance, the quantity per million gallons of sewage and the method of application. (d) The nature of the body into which the effluent discharges, with particular reference to the run-off during dry weather. (e) The disposal of sludge. (f) All conditions peculiarly characteristic of the locality and which in any way affect the design of the system. (g) Special devices used in connection with the disposal system. (h) Special methods of maintenance or operation of the system. (i) The results expected from the purification system. (j) Explain any provisions for reserve units in pumping plants, pipe lines, filters, etc.

Specifications and Estimate of Cost (9).

Specifications for the construction of the system of sewers and sewage disposal works and an estimate of the cost of the same shall accompany all plans for new or original systems. With plans for extensions of existing systems, specifications may be omitted, provided that these extensions are to be constructed in accordance with specifications filed previously with original plans.

Extension of Present System (10).

If the plans are solely for the extensions of an existing system, then only information as is necessary for the comprehension of plans will be required. This information must in general conform to the above requirements for a complete system.

General Requirements: Application for Approval.

The application for approval of plans shall be made by the proper municipal authorities, persons for whom the work is to be done, or properly authorized agents, upon blank forms which will be supplied by the board.

Systems on Separate Plan.

Under ordinary circumstances the board will approve such plans only when designed upon separate plan, in which all rainwater from roofs, streets, and other areas and all ground water, other than unavoidable leakage, is to be excluded.

By-Passes.

No by-passes which may allow raw or partly purified sewage to be discharged from the sewers or disposal works shall be included in the plans, except by special permission of the board.

Deviation from Approved Plans.

No deviation from approved plans shall be made, unless amended plans, showing such proposed changes, have been submitted to and approved by the board, (unless these changes do not affect the efficiency or the public health).

RULES AND REGULATIONS OF THE NORTHWESTERN SANITATION ASSOCIATION ADOPTED BY THE STATE BOARD OF HEALTH.

Reg. 1. No person having reason to believe that he or she is suffering from cholera, diphtheria (or membranous croup), plague, scarlet fever, smallpox, yellow fever, chicken pox or measles, shall enter, nor shall any person permit any one under his or her care so inflicted, to enter any public conveyance or common carrier.

Reg. 2. All conductors of railroad trains and street cars and captains of boats, if they have any reason to suspect any passenger to be suffering from any disease enumerated in Regulation 1, shall immediately notify the nearest health officer or company physician (when the health officer is not available) located on their route, by the most direct and speedy means possible, of their belief, and such health officer or company physician must meet such railroad train at the station, or such street car or boat at the nearest possible point, and make a thorough examination of such person and determine whether or not such disease exists.

Reg. 3. When the health officer or physician notified as provided in Regulation 2 shall find any person is a car, boat or other public conveyance to be afflicted with smallpox, diphtheria, scarlet fever, or other quarantinable disease, the car, boat or other public conveyance shall be turned over to the health officer or physician, who shall treat such conveyance as infected premises. When in the judgment of the health officer or physiciaa the case is in such early stage of development that other passengers are not affected, the patient shall be removed from the conveyance and it shall be allowed to proceed. If the health officer or physician shall deem that the exposure is such as to have infected other passengers, he shall call upon the person in charge to remove infected conveyance from service at the first place where suitable accommodations can be securied and such health officer or physician shall notify the health officer in whose jurisdiction the infected conveyance is left.

Reg. 4. No person shall spit on the floor, furnishings or equipment of any public conveyances, eating room, depot, platform, waiting room, deck or wharf. Each common carrier is hereby required to post or display in each day coach, smoking car or boat a notice in form or substance as follows:

For cars: "Spitting and throwing refuse on the floor, furnishings or vestibules of this car are prohibited by law."

For waiting rooms, eating rooms, toilets: "Spitting and throwing of refuse on the floor or furnishings of this room are prohibited by law."

For boats: "Spitting and throwing of refuse on the deck, floors or furnishings or in toilet rooms of this boat are prohibited by law."

Reg. 5. Each sleeping car shall be furnished with one (1) spittoon for each section or compartment. Each smoking compartment in day coaches, chair, parlor and sleeping cars, shall be furnished with at least two (2) spittoons. Each smoking car shall be provided with at least twelve (12))spittoons. Each combination smoking car shall be provided with at least six (6) spittoons. Each boat carrying passengers shall provide one spittoon or more for each state-room and general smoking saloon.

Reg. 6. The drinking water and ice supply used in stations and on public conveyances shall contain no ingredients deleterious to health. In the construction of new equipment all receptacles for drinking water should be so constructed that they cannot be opened readily by any one except those having charge of them. Nothing but ice and water shall be placed in the receptacles used for the storage of drinking water, the receptacle for drinking water shall be kept thoroughly clean at all times and shall be drained and flushed at car cleaning terminals.

When a water-borne disease has developed in epidemic form in a municipality, water from such place for car tanks shall not be used without the approval of the State Board of Health.

Reg. 7. The use of the common or public drinking cup is prohibited on all public conveyances and in waiting rooms.

Reg. 8. All public conveyances, including toilet rooms therein, shall be kept in a reasonably clean condition at all times. Dry sweeping and dusting of occupied conveyances is strictly prohibited.

Reg. 9. At cleaning terminals all passenger equipment shall be thoroughly cleaned and aired and after such cleaning the hoppers, urinals and toilet floors shall be mopped with a one or two per cent solution of official formaldehyde.

Reg. 10. Upon arrival at cleaning terminals, sleeping cars shall be cleaned as follows:

The windows, doors and ventilators shall be opened; the upper berths let down; the seat bottoms and backs lifted out; the mattresses, blankets, pillows, curtains, etc., loosely arranged for airing. If the weather permits, the removable articles mentioned above shall be taken out of the car, dusted and aired in the open, and exposed to the sunlight for a time. The rest of the cleaning of the car shall be carried out as directed for day coaches under Regulation 9.

Reg. 11. Sleeping cars shall be fumigated at least once every two months, and after the car is known to have carried any infectious disease. Fumigation shall be carried out before the carpets have been removed or the cleaning of the car begun, and record shall be posted in the car showing where and

when the fumigation was done. Preparation for fumigation shall be as follows:

Close all outside doors, windows, deck sash and ventilators. Arrange one window or more on each side of the car so that it can be opened from the outside to avoid the necessity of entering the car while the formaldehyde fumes are strong. Open all interior doors. Pull the seats forward and loosen the pillows in the pillow boxes. Open the upper berths and lay the head boards across the seats so that one corner will rest upon the seat arm. Lay the lower mattresses on the head boards with the middle arched upwards, the ends being pushed together. Raise the curtain poles and hang the curtain near the end by a single hook. Throw the blankets over the curtain poles, making as few folds or thicknesses of the blanket as possible. Arch the upper mattresses in the upper berths.

Fumigation shall be carried out along the lines approved by the State Board of Health. After the car has been fumigated it shall remain closed for a period of at least three (3) hours, after which time the doors and windows shall be opened as soon as possible. On rainy or damp days the car need not be kept closed after fumigation for a longer period than one hour.

Reg. 12. In all public conveyances the food boxes, refrigerators, lockers, drawers and cupboards shall be kept thoroughly sweet and clean at all times.

Reg. 13. The common roller towel shall be abolished on all common carriers and in waiting rooms.

Reg. 14. All toilet rooms, water closets, urinals and toilet appliances in stations shall be cleaned daily, and when vaults or surface receptacles are used in connection with closets at stations, such vaults or surface receptacles shall receive at least a weekly treatment with fresh lime or some other agent approved by the board of health. All outside closets shall be locked and the key kept by the agents, who shall deliver it to the patrons on request. There shall be a notice "Key at the Office" posted on the closet door.

Camp Sanitation Regulations.

Regulation 1. Hereafter contractors and all other persons who may establish an industrial camp or camps, for the purpose of logging or any like industry, or for the purpose of construction of any road, railroad or irrigation canal, or other work requiring the maintenance of camps for men engaged in such work, or any other temporary or permanent industrial camp of whatsoever nature, shall report to the state health official concerning the location of such camp or camps, and shall arrange such camp or camps in a manner approved by the state health official, so as to maintain good sanitary conditions, and shall at all times keep such camp or camps in a sanitary condition satisfactory to the state health official.

Reg. 2. Camps should be established upon dry, well-drained ground.

Reg. 3. Any natural sink holes or collections or pools of water should be artificially drained and filled when the camp is first established.

Reg. 4. The general scheme of the relation of the structure of the camps should be as follows: Stable and kitchen should be at opposite ends of the camp and separated by a distance as great as consistent with the natural topography of the land and with the necessity for convenient access to the stables.

Reg. 5. Eating houses should be next to the kitchen and beyond the eating houses should come the bunk houses, and between the bunk houses and the stables the toilets for the men in the camp.

Reg. 6. The use of the toilets provided for the men should be made obligatory and instant discharge of any employee polluting the soil must be rigidly enforced to make such rules effective.

Reg. 7. A small temporary incinerator should be constructed near the stables. Incinerators capable of doing effective work can be constructed for not over Twenty-five Dollars sufficient to care for all the refuse of a camp of one hundred fifty men and stables of ten to twelve horses.

Reg. 8. There must be in camps of one hundred men or over one employee whose particular duty should be acting as scavenger and garbage collector.

Reg. 9. All manure should be gathered and burned each day, and for the convenience of the collector should be thrown into a tightly covered box.

Reg. 10. All fecal matter should be treated in the same way or else treated in some other approved manner. Collection and incineration is the safest in the long run and the easiest method by making use of the removable pan, which can be freshly limed.

Reg. 11. The kitchen and eating house in particular should be effectively screened. It is also desirable to have this done for the bunk houses.

Reg. 12. All garbage should be collected in tight cans and incinerated daily along with manure and other rubbish.

Reg. 13. Non-inflammable refuse, such as tin cans, should be collected daily and placed in a deep earth pit and covered with a light covering of earth each day or covered with oil and burned over.

Reg. 14. All urinals should consist of open trenches lined with quick lime, and fresh quick lime should be added in the proportion of one-half barrel per day per one hundred men.

Reg. 15. All food supplies should be carefully screened.

Reg. 16. Thorough and systematic scrubbing of kitchens and eating houses, and to a less extent bunk houses, should be regularly insisted upon.

Reg. 17. The supply of water for the camp should be carefully decided upon, and wherever possible, if the camp is to remain several weeks, it is well to run it in pipes from an absolutely uncontaminated source.

Reg. 18. All sick from whatever cause should be isolated from the remainder of the crew immediately.

Reg. 19. All persons engaged in the care of the premises and handling of the food, particularly cooks and helpers, should be carefully examined and particular attention paid to the point as to whether or not they have suffered from typhoid fever within recent years.

BIRTHS AND DEATHS

In the accompanying tables will be found a record of births and deaths occurring in the State during the years 1912 and 1913, arranged according to counties and principal diseases.

We believe that the death record is quite complete, as the law prohibits the burial of any body in the State without a burial permit having first been secured from the local registrar, and this cannot be secured until a death certificate has been filed. This law is, we believe, generally observed.

Our report of deaths for the year 1913 shows an apparent increase in the death rate over the three years previous. This we believe is due to a greater increase in the population than we have estimated. In estimating the population we have used the same method that is used by the United States Census Bureau in estimating population, but we believe that there is no doubt but what the increase in Montana has been greater than we have shown in our estimation, and that the death rate in 1913 was in reality no higher than in previous years.

We are sorry to have to state that we have not the same confidence in the completeness of our birth records. Many of the doctors are careless about sending in the birth certificates. We would call attention, however, to the fact that the birth rate has increased more than is apparent in the tables compiled, as stillbirths are excluded in the year 1913, while they were included in the table of 1912. This change was made in 1913 so that our method would conform with the Federal method of compiling statistics.

TABLE NO. I

Deaths (Exclusive of Stillbirths) Reported to the State Board of Health During
Principal Cities and

JANUARY

	Spotted Fever		Smallpox		Tuberculosis		Diphtheria		Scarlet Fever		Measles		Typhoid Fever		Meningitis	
	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913
Beaverhead	...	...	...	...	...	1	...	...	...	...	...	1	...	...	1	...
Broadwater	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Carbon	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	1
Cascade Excl. of	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Great Falls	...	...	...	...	2	...	...	...	...	1	...	...	...	...	...	...
Chouteau	...	...	...	...	3	...	...	...	...	...	1	...	...	1	...	...
Custer	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Dawson	...	...	...	...	1	1	...	...	...	...	...	...	1	...	...	...
Deer Lodge Excl. of	...	...	...	...	...	3	...	...	...	...	...	...	...	...	...	...
Anaconda	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fergus	...	...	...	...	...	...	...	...	1	3	...	...	1	3	...	6
Flathead Excl. of	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Kalispell	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...
Gallatin Excl. of	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bozeman	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Granite	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Jefferson	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Lewis and Clark Excl. of	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...
Helena	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Lincoln	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Madison	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...
Meagher	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Missoula Excl. of	...	...	...	...	2	1	...	...	...	...	...	...	...	...	...	...
Missoula City	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1
Musselshell	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1
Park Excl. of	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Livingston	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Powell	...	...	...	...	...	1	...	...	...	2	...	...	...	...	...	...
Ravalli	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1
Rosebud	...	...	...	...	2	...	...	...	...	...	...	...	1	...	...	...
Sanders	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Silver Bow Excl. of	...	...	...	...	5	5	...	...	4	...	...	...	1	...	1	1
Butte	...	...	...	...	9	17	...	...	1	4	...	...	...	...	1	1
Sweet Grass	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Teton	...	...	2	...	2	2	...	2	...	...	...	...	...	...	...	...
Valley	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Yellowstone Excl. of	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...
Billings	...	...	...	...	1	2	...	...	...	...	...	...	...	...	...	...
Blaine	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Big Horn	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fallon	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hill	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Sheridan	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Stillwater	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Totals	...	...	2	...	37	42	...	2	6	10	1	1	6	4	3	12

TABLE NO. I

the Two Years Ending December 31st, 1913, Arranged According to Counties, Principal Causes.

JANUARY

Whooping Cough		Pneumonia		Nephritis		Organic Heart Disease		Malignant Tumors		Acute Intestinal Diseases		Violence		Suicide		Alcoholism		All Other Causes		Totals	
1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913
...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	....	1	1	5
...	...	...	...	...	1	1	...	...	...	...	...	2	...	...	...	...	...	2	1	5	3
...	...	2	1	...	2	...	...	...	2	...	...	...	1	1	...	...	...	3	5	7	13
...	...	...	3	...	...	...	...	...	...	...	1	3	2	...	...	...	1	3	3	7	10
...	...	3	5	1	2	2	4	1	1	1	...	2	2	1	1	...	...	6	11	18	27
...	...	1	3	1	...	...	...	...	...	...	...	1	1	...	...	...	...	6	....	13	5
...	...	...	1	1	1	2	1	...	...	...	...	1	1	...	1	...	...	2	6	6	12
...	...	...	5	...	1	1	...	1	...	...	...	...	...	...	...	...	...	7	2	11	9
...	...	...	...	...	...	...	2	...	1	...	...	...	...	...	...	...	...	6	12	6	18
...	...	1	6	2	1	...	1	...	...	...	...	1	1	...	1	...	...	3	5	7	15
...	...	...	3	2	...	1	2	2	1	...	...	...	1	...	...	...	...	3	6	10	25
...	...	1	...	2	...	...	...	...	...	...	...	4	3	...	...	...	...	5	2	12	6
...	...	1	1	2	...	...	...	...	1	...	...	...	...	...	...	...	...	2	....	7	2
...	...	...	2	1	...	...	1	...	...	...	...	1	1	...	...	...	...	4	2	6	6
...	...	...	2	2	2	...	1	...	4	...	...	...	...	...	...	...	...	6	2	8	11
...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	2	2	3	4
...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	1	3	2
...	...	...	1	3	2	...	3	1	...	...	...	...	...	...	...	...	...	1	3	7	9
...	1	2	5	2	2	1	...	...	1	...	...	...	1	...	...	1	...	8	3	14	13
...	...	...	1	...	...	1	...	...	1	...	...	...	...	1	...	...	...	1	1	3	3
...	...	...	1	1	...	1	2	...	...	...	...	...	1	1	...	1	...	1	....	6	5
...	...	...	3	...	1	1	1	...	...	...	1	...	...	...	...	...	...	1	1	2	7
...	...	1	2	...	...	...	1	...	...	...	...	1	3	...	...	...	1	4	6	8	14
...	...	5	3	...	1	...	3	4	2	...	...	1	3	...	...	...	1	5	9	15	24
...	...	1	2	...	...	...	...	...	...	...	1	...	2	...	2	...	...	1	2	3	10
...	...	1	1	2	...	...	2	3	...	...	...	...	...	...	...	...	...	4	3	10	6
2	...	1	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	1	....	6	1
...	...	1	1	...	1	...	1	...	...	...	...	...	1	...	...	...	...	1	5	2	12
...	...	1	...	...	...	...	1	...	...	...	...	...	2	1	...	...	...	4	6	7	10
...	...	5	2	...	...	...	1	1	...	...	...	...	2	...	...	...	...	....	2	9	7
...	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	4	2	4	4
...	...	2	2	...	1	2	3	...	...	3	...	1	4	1	...	...	...	6	6	26	22
...	...	9	8	3	5	3	3	2	4	3	...	7	6	1	1	2	1	19	21	60	71
...	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	2	3	3	4
...	...	1	7	...	1	...	1	1	...	...	2	1	3	...	...	...	...	2	6	9	24
...	...	2	...	...	...	...	...	1	1	...	...	...	...	...	...	1	...	1	....	5	1
...	...	2	1	...	1	...	...	...	...	...	1	2	...	1	...	...	...	2	2	9	5
...	...	2	1	3	1	1	1	...	...	...	3	1	1	2	1	...	1	6	3	16	14
...	...	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	....	2	....	5
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	....	....	....	....
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	....	....	....	....
...	...	...	1	...	...	...	3	...	...	...	...	...	...	...	1	...	...	....	5	....	11
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	....	....	....	....
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	....	....	....	....
2	1	45	79	29	26	19	41	17	19	7	9	30	44	9	8	5	5	136	152	354	455

TABLE NO. 1 (CONTINUED).

FEBRUARY

	Spotted Fever		Smallpox		Tuberculosis		Diphtheria		Scarlet Fever		Measles		Typhoid Fever		Meningitis	
	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913
Beaverhead																
Broadwater					1	2										
Carbon						1										
Cascade Excl. of						1										
Great Falls					1	1								1		
Chouteau					2		1									
Custer						6		1								1
Dawson							1						1	2		
Deer Lodge Excl. of																
Anaconda					1	1										
Fergus													1	1		3
Flathead Excl. of																
Kalispell						1										
Gallatin Excl. of						1										1
Bozeman						1										
Granite						1										
Jefferson											1					
Lewis and Clark Excl. of																
Helena					2											
Lincoln																
Madison												1			1	
Meagher																
Missoula Excl of					3	3										
Missoula City						2									1	1
Musselshell						1										
Park Excl. of																
Livingston						2										
Powell																
Ravalli					1											
Rosebud					2											
Sanders					1								1			
Silver Bow Excl. of					4	7										
Butte					11	14					2					
Sweet Grass																
Teton						3										1
Valley					4	3									1	
Yellowstone Excl. of					2	1										
Billings					1	1										1
Blaine																
Big Horn																
Fallon																
Hill						1										
Sheridan																
Stillwater																
Totals					36	54	2	1			2	1	1	3	4	3	8

TABLE NO. 1 (CONTINUED).

FEBRUARY

Whooping Cough		Pneumonia		Nephritis		Organic Heart Disease		Malignant Tumors		Acute Intestinal Diseases		Violence		Suicide		Alcoholism		All Other Causes		Totals	
1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913
...	...	...	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	3	....	4	1
...	...	...	...	1	...	...	1	...	...	...	...	1	...	...	...	...	...	1	1	4	4
...	...	1	3	1	1	2	...	...	...	...	...	2	...	...	...	...	...	3	2	9	7
...	...	1	1	...	...	...	...	1	...	1	...	...	2	...	1	1	...	....	4	4	9
1	...	3	3	2	1	3	3	...	2	...	...	1	...	...	1	....	1	6	16	17	29
...	...	2	2	...	...	...	1	2	...	...	...	...	...	...	...	...	...	4	2	11	5
...	...	1	1	...	...	...	1	...	...	...	...	...	...	...	...	1	....	5	3	7	13
...	...	1	3	...	...	...	...	...	...	...	...	1	2	1	...	1	....	4	....	10	7
...	...	...	...	...	...	...	2	...	...	...	...	1	...	...	...	1	....	10	2	12	4
...	...	1	2	...	3	3	1	1	...	...	...	...	1	...	...	....	....	6	7	12	15
...	...	...	4	...	...	1	1	1	...	...	1	...	1	...	...	1	....	3	4	7	15
...	...	...	4	1	1	1	3	...	...	...	...	...	...	...	...	....	....	3	3	5	11
...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	....	....	1	....	1	3
...	...	...	1	...	...	1	3	1	...	...	...	1	1	1	1	....	....	1	3	5	11
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	....	....	2	1	2	2
...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	1	....	2	1	3	4
...	...	2	1	2	...	...	1	...	...	...	...	...	1	...	...	....	....	4	1	9	4
...	...	...	...	1	1	...	3	...	...	...	...	...	...	...	...	....	....	1	1	2	5
...	...	2	4	1	2	2	3	1	1	...	...	1	1	...	2	....	....	3	5	12	18
...	...	...	...	...	...	...	...	1	...	...	...	...	2	...	...	....	....	2	1	3	3
...	...	1	...	1	1	...	...	...	...	1	1	1	...	...	...	....	....	....	2	5	5
...	1	...	...	...	...	1	1	...	...	...	...	2	2	...	...	....	....	....	1	3	4
...	...	1	1	...	...	...	1	...	...	...	...	2	3	...	...	....	1	1	2	7	11
...	...	1	3	2	2	1	2	1	3	...	...	3	...	2	...	1	....	3	5	15	18
...	1	2	...	...	...	...	...	...	...	...	...	1	...	...	...	....	....	1	1	4	3
...	...	1	1	...	...	...	...	...	...	...	...	1	1	...	...	....	....	1	....	3	2
2	...	1	1	...	...	...	1	...	1	...	...	...	1	...	...	....	....	1	4	3	10
...	...	1	3	...	1	...	1	...	...	1	...	...	2	...	1	....	1	1	....	3	9
...	...	1	1	...	...	1	2	...	2	...	...	...	...	...	...	....	....	2	4	5	9
...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	1	....	1	2	....	6	2
...	...	1	2	2	...	...	1	...	1	...	...	1	1	...	...	....	....	2	2	8	7
...	...	3	1	1	1	1	...	...	...	...	1	3	2	...	...	....	1	4	5	16	18
...	...	5	23	2	6	5	11	2	4	1	2	6	3	2	2	....	1	21	18	55	86
...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	....	....	1	2	2	2
...	...	2	2	...	...	...	2	...	1	...	...	...	...	...	...	....	....	4	4	6	13
...	...	...	4	1	...	1	1	...	...	...	1	1	...	...	...	....	....	4	6	12	15
...	...	2	5	...	1	...	2	...	...	...	...	...	...	...	...	....	....	7	3	11	12
...	...	3	7	1	...	4	1	...	...	1	...	...	...	...	...	....	....	1	4	11	14
...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	....	....	....	3	....	4
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	....	....	....	....	....	....
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	....	....	....	....	....	....
...	...	...	1	...	1	...	3	...	...	...	...	...	...	...	...	....	....	....	5	....	11
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	....	....	....	....	....	....
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	....	....	....	....	....	....
3	1	40	86	20	22	27	53	11	16	5	6	30	28	6	9	7	6	120	128	314	425

TABLE NO. 1 (CONTINUED).

MARCH

	Spotted Fever		Smallpox		Tuberculosis		Diphtheria		Scarlet Fever		Measles		Typhoid Fever		Meningitis	
	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913
Beaverhead	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Broadwater	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Carbon	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...
Cascade Excl. of	...	...	...	...	1	2	...	...	...	...	...	...	...	...	...	...
Great Falls	...	...	...	...	1	2	...	...	...	7	...	1	...	1	...	2
Chouteau	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Custer	...	...	...	...	2	3	...	...	...	...	...	...	...	...	...	...
Dawson	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...
Deer Lodge Excl. of	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Anaconda	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Fergus	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	1
Flathead Excl. of	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...
Kalispell	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Gallatin Excl. of	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bozeman	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Granite	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Jefferson	...	...	...	...	1	...	...	...	...	...	...	2	...	...	...	...
Lewis and Clark Excl. of	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Helena	...	...	...	...	4	...	...	...	...	...	...	...	...	2	...	...
Lincoln	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Madison	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Meagher	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Missoula Excl. of	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Missoula City	...	1	...	...	2	3	...	...	...	...	...	...	...	...	...	...
Musselshell	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Park Excl. of	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Livingston	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...
Powell	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...
Ravalli	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	1
Rosebud	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...
Sanders	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Silver Bow Excl. of	...	...	...	...	6	7	...	...	4	...	...	...	...	...	1	1
Butte	...	...	...	...	9	15	...	...	1	3	...	2	...	...	...	3
Sweet Grass	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Teton	...	...	1	...	14	...	...	...	...	...	...	...	...	...	...	1
Valley	...	...	...	...	3	...	...	...	...	...	...	...	...	...	...	1
Yellowstone Excl. of	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...
Billings	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...
Blaine	...	...	...	...	1	3	...	...	...	...	...	...	...	...	...	...
Big Horn	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fallon	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hill	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
Sheridan	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Stillwater	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Totals	...	1	1	...	55	40	...	1	5	13	1	5	1	4	1	15

TABLE NO. 1 (CONTINUED).

MARCH

Whooping Cough		Pneumonia		Nephritis		Organic Heart Disease		Malignant Tumors		Acute Intestinal Diseases		Violence		Suicide		Alcoholism		All Other Causes		Totals		
1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	
...	...	...	2	...	...	...	1	...	...	...	...	...	1	1	...	...	...	...	4	1	8	
...	...	...	...	...	...	1	...	1	1	1	...	...	1	...	...	...	...	1	1	4	3	
1	...	2	1	...	2	1	...	...	...	...	2	...	1	...	...	...	...	7	5	13	11	
...	...	2	...	...	...	...	2	...	...	...	...	1	...	...	...	...	...	3	1	7	5	
...	...	4	4	1	3	3	3	...	...	...	...	...	2	1	...	2	1	11	15	23	41	
...	...	...	1	...	...	...	1	...	1	...	1	1	...	...	1	...	...	...	5	1	11	
...	...	...	1	2	3	1	...	...	...	...	...	...	...	...	...	...	...	1	1	6	7	
...	...	2	2	...	...	...	2	...	1	...	1	2	2	...	...	...	...	5	5	10	14	
...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	9	10	9	11	
...	...	2	4	2	2	3	1	...	...	...	...	...	1	...	...	...	1	7	8	14	18	
...	...	1	2	1	1	...	1	1	...	...	...	1	2	...	...	...	...	3	5	7	14	
...	...	...	3	...	...	1	2	1	...	...	...	...	1	...	...	...	1	7	7	10	15	
...	...	1	...	...	...	...	...	1	...	...	...	...	...	1	...	...	1	3	...	6	2	
...	...	1	...	...	...	1	3	1	...	...	...	...	2	...	...	...	...	4	3	7	7	
...	...	1	1	...	1	1	1	3	1	...	...	...	...	...	...	...	...	3	4	8	8	
...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	1	2	1	5	2	
...	...	...	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	4	
...	...	4	1	...	1	...	...	...	1	...	...	...	1	...	...	1	...	2	3	7	8	
...	...	...	3	1	1	1	2	1	1	...	...	1	1	...	...	...	...	3	6	11	16	
...	...	...	1	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	...	1	2	
...	...	2	1	...	...	...	1	1	...	...	3	...	...	...	...	...	...	...	3	6	6	
...	...	1	...	...	...	...	...	...	1	...	...	1	1	...	...	...	...	4	3	6	6	
...	...	1	1	1	...	...	2	1	...	...	...	3	...	...	...	...	...	5	4	12	7	
...	...	8	1	...	...	2	1	1	...	1	...	...	1	...	1	...	1	3	3	17	12	
...	...	2	1	...	...	...	1	...	...	...	1	...	...	...	...	...	...	2	3	4	6	
2	...	1	1	1	...	...	1	...	...	...	...	...	...	...	...	...	...	3	2	7	5	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	5	4	6	
...	...	...	...	...	2	2	...	...	...	...	...	...	1	...	...	...	...	1	2	5	5	
...	...	...	4	1	1	...	...	...	...	...	...	1	...	1	...	...	...	5	2	8	10	
...	...	3	...	...	...	...	1	...	...	...	...	1	2	...	...	...	...	1	1	7	4	
...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	1	1	1	3	
...	...	3	7	...	3	1	2	...	1	1	2	1	4	...	...	1	...	2	2	20	29	
...	...	7	18	2	4	1	10	4	2	1	...	5	7	...	...	1	1	12	24	43	89	
...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	4	2	5	2	
1	...	1	4	...	...	2	1	...	...	...	...	1	...	1	...	...	...	4	5	25	11	
...	...	3	2	...	...	1	1	...	...	...	...	...	1	...	...	...	...	6	4	13	9	
1	...	5	...	...	...	...	...	...	...	...	1	...	1	...	...	...	...	3	2	9	5	
...	...	2	1	...	...	2	...	1	...	...	...	1	...	...	1	...	...	2	6	9	9	
...	...	1	1	...	1	1	...	...	...	...	2	1	1	...	...	...	...	1	4	5	12	
...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	2	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
...	...	1	...	...	...	...	3	...	...	...	...	2	...	...	1	...	...	1	7	5	11	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	
5	...	61	71	13	25	26	46	17	11	7	10	26	35	5	4	5	8	134	168	363	457	

TABLE NO. 1 (CONTINUED).

APRIL

	Spotted Fever		Smallpox		Tuberculosis		Diphtheria		Scarlet Fever		Measles		Typhoid Fever		Meningitis	
	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913
Beaverhead	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Broadwater	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Carbon	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cascade Excl. of	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...
Great Falls	...	...	...	...	1	2	...	...	...	3	...	1	1	4	...	1
Chouteau	...	...	...	...	1	2	...	...	...	1	...	...	...	...	...	...
Custer	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1
Dawson	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...
Deer Lodge Excl. of	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...
Anaconda	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Fergus	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...
Flathead Excl. of	...	...	...	...	1	...	...	...	1	...	...	...	...	...	1	...
Kalispell	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1
Gallatin Excl. of	...	...	...	...	1	...	...	...	1	1	...	...	...	...	...	...
Bozeman	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Granite	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Jefferson	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Lewis and Clark Excl. of	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Helena	...	...	...	...	4	...	...	...	...	3	...	...	...	...	...	...
Lincoln	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	1
Madison	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...
Meagher	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...
Missoula Excl. of	...	...	...	...	1	1	...	...	...	...	...	...	1	...	1	...
Missoula City	...	1	...	...	2	...	...	...	...	...	...	1	1	...	...	...
Musselshell	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Park Excl. of	...	...	...	...	1	1	...	...	...	...	...	...	...	1	...	...
Livingston	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Powell	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ravalli	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Rosebud	...	...	...	...	4	1	...	...	...	...	...	...	1	...	...	...
Sanders	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...
Silver Bow Excl. of	...	...	...	...	4	6	1	...	1	...	...	1	...	...	1	2
Butte	...	...	...	...	10	7	...	...	...	4	...	5	...	...	3	2
Sweet Grass	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Teton	...	...	...	...	4	1	...	...	1	1	...	1	1	...	...	...
Valley	...	...	...	...	4	...	...	...	...	...	...	1	...	...	...	...
Yellowstone Excl. of	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...
Billings	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Blaine	...	...	...	...	3	3	...	...	...	...	...	...	...	...	...	...
Big Horn	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fallon	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hill	...	...	...	...	1	...	...	...	...	1	2	...	...	...	...	...
Sheridan	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Stillwater	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Totals	...	1	...	1	48	33	2	...	4	21	2	11	8	6	6	8

TABLE NO. I (CONTINUED).

APRIL

Whooping Cough		Pneumonia		Nephritis		Organic Heart Disease		Malignant Tumors		Acute Intestinal Diseases		Violence		Suicide		Alcoholism		All Other Causes		Totals		
1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	
...	...	...	...	1	1	...	1	...	...	...	...	...	2	...	...	...	...	2	2	4	6	
...	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...	1	1	2	2	
1	...	2	...	...	...	1	...	...	...	...	...	...	2	...	1	1	...	4	2	9	5	
1	...	...	...	1	...	...	...	...	...	1	...	1	2	...	1	...	...	4	4	7	10	
...	1	1	3	1	...	1	6	2	1	...	2	1	4	...	1	...	...	5	16	13	45	
...	...	...	2	...	...	1	1	...	...	...	...	...	1	...	...	...	...	...	2	2	9	
...	2	1	...	...	2	1	1	...	...	1	...	3	...	...	1	...	...	3	5	10	12	
...	...	...	3	3	...	2	1	6	2	...	2	2	4	...	...	...	...	1	8	8	22	
...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	9	8	10	10	
...	...	2	3	1	...	2	1	...	...	...	...	...	...	...	3	...	...	2	5	8	12	
...	...	...	6	1	1	2	1	...	...	...	...	3	4	1	...	...	...	6	7	13	21	
...	...	1	2	1	1	2	1	1	1	1	1	...	1	...	2	...	1	4	3	13	13	
...	...	...	2	1	1	1	1	1	...	...	...	1	...	...	...	...	...	3	4	8	9	
...	...	1	...	...	2	2	...	...	...	...	...	1	1	...	...	...	...	1	3	7	7	
...	...	2	...	...	1	...	3	...	...	...	...	...	...	...	...	...	...	1	2	3	6	
...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	2	2	3	
...	...	...	...	1	...	...	1	...	...	...	...	...	...	...	1	1	...	1	5	3	8	
...	...	2	...	1	1	...	2	...	...	...	...	...	...	1	...	...	...	1	1	6	4	
...	1	...	5	2	2	1	1	5	...	...	...	1	2	1	2	...	1	6	10	20	27	
...	...	...	1	...	...	...	...	...	...	...	...	...	2	...	...	...	...	2	1	2	7	
...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	4	3	5	6	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	2	
3	...	2	...	1	...	2	1	...	1	...	...	2	...	...	...	...	...	3	3	16	6	
...	...	3	3	...	2	2	...	1	...	...	...	1	3	...	...	...	...	4	7	14	17	
...	...	1	...	...	...	1	...	...	...	...	...	...	1	...	1	...	...	1	1	3	3	
...	...	4	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	4	1	9	5	
...	...	...	2	3	1	...	1	...	...	...	...	...	...	...	...	1	...	2	3	6	8	
...	...	2	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	2	4	2	
...	...	...	1	2	3	...	1	...	...	...	...	1	1	...	...	...	...	2	1	6	7	
...	...	...	...	...	...	1	...	...	...	...	...	4	1	...	...	...	...	1	...	11	2	
...	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	1	2	1	6	
...	...	4	1	2	2	3	2	1	...	...	1	4	10	...	...	1	...	6	6	28	31	
...	2	3	13	3	4	5	6	2	1	1	...	4	3	1	...	1	2	14	16	47	65	
...	...	...	...	...	...	...	...	...	...	...	...	1	2	...	...	...	...	2	1	3	3	
...	...	1	3	1	...	...	1	...	...	...	...	1	1	...	...	...	...	8	5	17	13	
...	...	3	1	...	...	2	1	1	...	...	1	...	1	...	...	...	...	4	2	14	7	
...	...	...	1	2	...	...	1	1	1	...	...	...	...	...	1	...	...	5	...	10	4	
...	...	...	1	1	...	...	...	...	...	...	...	2	1	...	...	...	...	3	2	7	4	
...	...	1	1	1	...	...	1	...	...	...	...	...	...	1	...	...	...	...	2	6	7	
...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	
...	...	...	...	2	2	2	2	1	...	...	...	1	...	...	...	...	1	4	5	13	11	
...	...	...	...	...	...	...	1	...	...	...	...	...	2	...	...	...	...	...	1	...	4	
...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	3	
5	6	37	57	31	26	37	41	16	8	5	7	35	52	6	14	4	7	125	156	371	455	

TABLE NO. 1 (CONTINUED).

MAY

	Spotted Fever		Smallpox		Tuberculosis		Diphtheria		Scarlet Fever		Measles		Typhoid Fever		Meningitis	
	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913
Beaverhead	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Broadwater	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Carbon	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Cascade Excl. of	...	...	...	...	...	...	...	...	...	3	...	...	...	...	...	...
Great Falls	...	...	...	...	2	1	...	...	...	2	...	...	...	...	...	...
Choutead	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
Custer	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Dawson	...	...	...	...	1	2	...	1	...	...	...	...	...	...	...	...
Deer Lodge Excl. of	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Anaconda	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Fergus	...	...	...	...	...	1	...	...	...	5	...	...	...	1	...	1
Flathead Excl. of	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Kalispell	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Gallatin Excl. of	...	...	...	...	2	2	...	...	...	...	...	...	...	...	...	...
Bozeman	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Granite	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Jefferson	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...
Lewis and Clark Excl. of	...	...	...	...	...	...	...	...	...	1	...	...	...	...	1	...
Helena	...	...	...	...	3	...	...	...	...	...	...	...	...	...	...	1
Lincoln	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...	1
Madison	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...
Meagher	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Missoula Excl. of	1	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...
Missoula City	...	1	...	...	...	1	...	...	...	...	...	...	1	...	...	...
Musselshell	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...
Park Excl. of	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Livingston	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Powell	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Ravalli	2	3	...	...	1	1	...	...	...	...	...	...	...	...	...	...
Rosebud	...	...	...	...	3	...	...	...	...	...	...	...	...	...	...	...
Sanders	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Silver Bow Excl. of	...	...	...	...	7	7	...	...	1	...	...	...	...	1	...	...
Butte	...	...	...	...	7	7	...	...	...	2	...	...	...	...	2	2
Sweet Grass	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Teton	...	...	...	...	9	...	...	...	...	...	...	...	...	...	...	...
Valley	...	...	...	...	6	...	...	...	...	...	...	...	...	...	...	...
Yellowstone Excl. of	...	...	...	...	2	1	...	...	1	...	...	...	...	...	...	...
Billings	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...
Blaine	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Big Horn	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fallon	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hill	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	1
Sheridan	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Stillwater	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Totals	3	4	...	...	50	34	...	1	2	13	1	...	2	3	3	8

TABLE NO. 1 (CONTINUED).

MAY

Whooping Cough		Pneumonia		Nephritis		Organic Heart Disease		Malignant Tumors		Acute Intestinal Diseases		Violence		Suicide		Alcoholism		All Other Causes		Totals	
1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913
...	...	2	2	...	...	...	...	...	...	...	...	1	...	1	....	....	....	2	3	6	6
...	...	...	...	1	1	...	...	...	...	...	1	1	1	...	....	....	....	....	2	2	5
...	...	2	2	...	...	3	1	...	...	1	1	...	1	...	....	....	....	3	2	9	8
2	...	...	3	1	...	1	...	...	1	...	...	2	...	...	....	....	1	2	4	8	11
...	...	...	3	...	...	3	1	...	2	...	...	1	2	1	....	1	....	4	6	12	17
...	...	...	...	...	...	...	1	...	2	...	...	1	1	...	....	....	....	1	1	2	6
...	...	...	1	2	...	...	1	...	...	...	1	...	1	...	....	....	....	3	3	7	6
...	...	...	2	...	...	2	1	...	...	...	...	3	1	...	2	....	1	2	5	8	16
...	...	...	...	2	...	...	...	...	...	...	...	1	...	1	....	....	....	7	12	11	12
...	...	...	1	1	1	3	1	...	...	1	...	...	1	...	....	....	....	2	5	8	9
...	...	...	2	...	2	...	2	...	...	...	1	1	...	...	....	....	....	4	7	5	22
1	1	...	2	...	...	...	2	...	1	...	1	2	2	...	1	....	....	4	6	7	16
...	...	1	1	1	...	1	1	...	...	...	...	...	1	...	....	....	....	2	4	5	7
...	...	...	4	1	1	...	...	1	2	...	...	1	...	...	....	....	....	3	2	8	11
...	...	...	1	...	...	...	1	1	...	...	...	...	...	...	....	....	....	1	2	2	4
...	...	...	...	...	...	1	...	...	...	...	...	...	1	...	....	....	....	....	1	1	2
...	...	...	...	...	...	1	1	1	...	...	...	1	...	...	....	....	....	1	2	6	3
...	...	...	...	1	2	2	1	...	1	...	...	2	1	...	....	....	....	2	3	8	9
...	...	1	...	...	1	4	1	1	2	...	...	3	...	1	1	1	....	5	7	19	13
...	...	...	...	...	...	1	1	...	1	...	...	1	2	...	....	....	....	1	1	4	7
...	...	1	4	2	1	1	1	...	1	...	...	...	...	...	....	....	....	1	2	6	10
1	...	...	...	...	...	1	...	...	...	...	...	...	1	...	....	....	....	....	2	2	3
1	...	2	...	...	...	...	...	...	1	...	...	2	1	...	1	....	....	2	3	9	7
...	...	1	1	1	1	4	2	1	2	1	...	2	1	...	1	....	2	4	3	15	15
3	...	...	1	...	...	2	...	...	...	...	...	2	1	1	....	....	....	2	....	11	3
...	...	2	...	...	...	...	1	...	...	...	1	2	1	...	....	1	....	1	3	6	6
...	1	...	2	1	...	...	...	1	...	...	...	1	2	...	....	....	....	....	3	3	9
...	...	2	...	...	1	1	...	...	...	...	1	...	1	...	....	....	....	5	3	9	6
...	...	...	1	...	...	2	1	...	...	...	...	1	1	...	....	....	....	2	3	8	10
...	...	1	...	...	...	...	...	...	...	...	...	4	...	...	....	....	....	....	....	8	....
...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	....	....	....	1	1	1	4
...	...	2	5	4	2	1	...	...	1	...	...	3	4	...	1	....	1	5	3	23	25
...	1	6	16	4	6	4	9	3	1	3	1	3	7	...	1	....	1	17	24	49	78
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	....	....	....	....	3	....	3
...	...	3	...	...	...	...	2	...	...	...	...	2	1	...	....	....	....	4	4	18	7
1	...	...	...	...	...	2	...	...	...	...	...	3	3	3	....	....	....	5	....	20	3
...	...	3	2	1	...	...	1	...	...	...	...	1	2	...	....	....	....	3	4	11	10
...	...	3	1	...	1	...	...	2	1	...	...	2	...	...	....	....	1	3	5	10	11
...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	1	....	....	2	....	3	3
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	....	....	....	....	....	....	....
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	....	....	....	....	....	....	....
...	...	...	2	...	...	2	2	...	...	1	...	3	...	...	1	....	....	2	4	8	12
...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	....	....	....	....	....	....	3
...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	....	....	1	....	....	....	2
9	3	32	61	24	21	42	36	11	19	8	7	52	44	8	10	3	8	108	148	358	420

TABLE NO. 1 (CONTINUED).

JUNE

	Spotted Fever		Smallpox		Tuberculosis		Diphtheria		Scarlet Fever		Measles		Typhoid Fever		Meningitis	
	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913
Beaverhead	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
Broadwater	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Carbon	...	1	...	...	1	...	...	...	1	...	...	...	...	...	...	...
Cascade Excl. of	...	...	...	...	...	...	...	...	...	3	...	...	...	...	...	...
Great Falls	...	...	...	...	5	2	...	...	...	2	...	...	...	...	1	1
Chouteau	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Custer	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...
Dawson	...	...	...	...	2	...	...	...	...	1	...	...	...	...	...	...
Deer Lodge Excl. of	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...
Anaconda	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Fergus	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...
Flathead Excl. of	...	...	...	...	2	1	...	...	...	1	...	...	...	1	...	...
Kalispell	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Gallatin Excl. of	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Bozeman	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Granite	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Jefferson	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Lewis and Clark Excl. of	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Helena	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...
Lincoln	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Madison	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Meagher	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Missoula Excl. of	...	...	...	...	4	...	...	...	...	...	...	...	...	...	...	...
Missoula City	1	...	...	...	3	2	...	...	...	...	...	...	...	...	1	...
Musselshell	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Park Excl. of	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Livingston	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Powell	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Ravalli	2	...	...	...	1	1	...	...	...	1	...	...	...	...	...	...
Rosebud	...	...	...	...	6	...	...	...	...	...	...	...	...	...	...	...
Sanders	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Silver Bow Excl. of	...	...	...	...	1	6	...	...	...	...	...	...	...	...	...	...
Butte	...	...	...	...	8	7	...	...	...	2	...	...	1	...	2	3
Sweet Grass	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Teton	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...
Valley	...	...	...	...	4	1	...	...	...	...	...	...	...	...	...	...
Yellowstone Excl. of	...	...	...	...	3	...	...	...	...	...	...	...	...	...	...	...
Billings	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...
Blaine	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...
Big Horn	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fallon	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hill	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Sheridan	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Stillwater	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Totals	3	2	...	...	48	30	...	1	1	10	...	...	1	2	5	6

TABLE NO. 1 (CONTINUED).

JUNE

Whooping Cough		Pneumonia		Nephritis		Organic Heart Disease		Malignant Tumors		Acute Intestinal Diseases		Violence		Suicide		Alcoholism		All Other Causes		Totals	
1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913
...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	2	1	3	3
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	1
...	...	...	...	...	...	1	1	...	...	...	...	6	3	...	...	...	...	2	5	11	10
...	1	1	1	1	...	1	...	...	1	...	1	1	4	1	...	...	...	...	4	5	15
1	...	...	2	...	1	2	2	1	2	...	...	1	3	...	...	...	...	3	5	14	20
...	...	...	1	...	...	1	...	1	...	...	...	...	...	...	...	...	...	1	3	3	4
...	...	...	...	...	1	...	1	...	...	...	1	2	3	...	2	...	...	5	5	8	13
...	...	...	...	...	1	2	1	...	1	...	1	...	3	...	...	...	...	4	5	8	13
...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	6	6	7	8
...	...	...	1	1	...	1	1	...	...	...	1	2	...	...	1	...	...	5	3	11	6
...	...	...	...	...	...	2	1	...	...	...	...	1	1	1	1	...	1	3	6	7	12
...	2	...	...	2	1	1	1	1	...	...	...	3	5	1	...	...	...	4	1	14	14
...	...	...	...	1	...	1	3	...	2	...	...	1	...	...	...	1	...	...	1	4	7
...	...	...	1	...	...	2	2	1	...	...	...	1	1	...	...	...	...	2	2	6	7
...	...	...	...	2	2	...	2	1	...	...	...	1	...	...	...	...	...	1	...	5	4
...	...	1	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	1	...	2	3
...	...	...	...	...	...	1	...	1	...	...	...	...	1	...	...	...	...	...	1	2	2
...	...	...	...	2	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	4	...
...	...	1	1	...	3	1	...	1	...	...	...	1	1	1	1	...	...	5	2	12	8
...	...	...	1	1	...	...	...	...	...	1	...	...	2	...	...	...	...	...	...	2	3
...	...	...	...	1	...	...	1	...	1	...	...	1	3	...	...	...	...	4	...	6	5
...	...	...	...	...	...	...	1	...	1	...	...	...	3	...	1	...	...	2	2	4	7
2	...	1	1	1	...	...	2	...	1	...	...	4	5	1	...	...	...	1	2	14	11
2	...	...	...	1	2	...	1	...	1	1	...	1	2	...	...	1	...	5	4	16	12
...	...	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	1	2	2
...	...	1	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	3	...	4	2
...	1	...	1	1	...	2	...	...	...	...	...	...	1	...	...	...	...	1	1	4	4
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...	3	1
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	1	8	4
...	...	...	...	...	...	2	1	...	...	...	...	...	...	...	...	...	...	...	1	11	3
...	...	1	...	...	...	...	1	...	1	...	...	4	...	...	...	...	...	...	...	3	2
...	1	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	2	...	11	21
...	1	1	...	...	4	1	1	...	...	...	2	4	2	...	1	...	...	4	4	64	63
...	3	8	6	5	3	7	11	1	2	...	3	8	5	2	3	3	1	19	14	4	2
...	...	1	...	...	...	...	1	1	...	...	...	1	...	...	...	...	...	1	...	11	3
...	...	1	...	...	...	1	...	...	...	1	...	...	1	...	...	...	...	6	2	17	3
...	...	1	1	...	...	1	...	1	...	2	...	4	...	...	...	...	...	4	1	10	4
...	...	2	...	...	...	1	...	1	...	...	1	2	1	...	...	...	...	1	2	6	12
1	...	1	...	...	1	...	1	...	1	1	...	1	1	...	2	...	...	1	5	6	6
...	...	...	...	1	...	1	2	...	...	...	1	...	1	...	...	...	...	3	1	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	1	...	...	1	1	1	...	2	...	...	2	...	...	...	...	2	6	6	11
...	...	...	2	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	2	...	6
...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	2
6	9	21	21	20	21	34	42	12	15	10	9	52	58	7	11	7	2	111	100	338	339

TABLE NO. 1 (CONTINUED).

JULY

	Spotted Fever		Smallpox		Tuberculosis		Diphtheria		Scarlet Fever		Measles		Typhoid Fever		Meningitis	
	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913
Beaverhead	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Broadwater	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Carbon	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cascade Excl. of	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Great Falls	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...
Chouteau	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Custer	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dawson	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Deer Lodge Excl. of	...	...	...	...	...	3	...	...	...	...	...	...	...	...	...	...
Anaconda	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1
Fergus	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Flathead Excl. of	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...
Kalispell	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Gallatin Excl. of	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bozeman	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Granite	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Jefferson	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Lewis and Clark Excl. of	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...
Helena	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...
Lincoln	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Madison	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Meagher	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Missoula Excl. of	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Missoula City	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...
Musselshell	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...
Park Excl. of	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Livingston	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
Powell	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ravalli	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Rosebud	...	...	...	...	4	...	...	...	...	...	...	...	...	...	...	...
Sanders	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Silver Bow Excl. of	...	...	...	...	8	3	...	...	1	...	...	...	...	...	...	...
Butte	...	...	...	...	6	6	...	...	...	1	...	...	...	...	...	3
Sweet Grass	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Teton	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Valley	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Yellowstone Excl. of	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...
Billings	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2
Blaine	...	...	...	...	3	...	...	...	...	...	...	...	...	...	1	...
Big Horn	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fallon	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hill	...	...	...	...	...	...	...	...	...	...	...	...	1	2	...	...
Sheridan	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Stillwater	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Totals	...	...	...	..	30	17	...	3	1	2	...	...	4	5	2	7

TABLE NO. 1 (CONTINUED).

JULY

Whooping Cough		Pneumonia		Nephritis		Organic Heart Disease		Malignant Tumors		Acute Intestinal Diseases		Violence		Suicide		Alcoholism		All Other Causes		Totals	
1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913
...	...	...	...	...	1	1	1	...	...	...	...	2	...	...	....	1	1	4	1	9	4
...	...	1	...	...	...	...	1	...	...	...	...	2	...	...	....	....	....	1	....	4	2
...	...	...	...	...	...	...	2	1	...	...	1	...	1	...	....	....	....	7	2	8	6
...	...	1	...	...	...	...	1	1	...	...	...	4	2	...	....	....	....	1	1	7	5
...	...	1	1	1	1	2	2	...	2	1	3	...	1	2	....	1	....	4	10	12	22
...	...	...	...	...	1	...	...	...	...	...	...	1	1	...	....	....	....	1	1	2	3
...	...	1	...	1	...	...	...	...	...	...	...	2	1	...	....	....	....	2	2	6	3
1	...	...	...	...	...	...	...	...	...	...	2	4	2	...	....	....	....	2	3	7	8
...	...	...	1	...	1	3	...	...	...	...	...	1	...	...	....	....	....	5	5	9	10
...	...	...	...	2	1	1	1	...	...	...	...	...	1	...	....	....	....	2	3	5	8
...	...	...	1	1	...	2	...	1	...	...	...	...	1	1	....	....	2	2	5	8	9
...	...	1	1	...	1	2	2	...	1	...	...	3	4	1	1	....	....	....	4	8	15
...	...	...	...	...	...	...	1	...	...	...	1	...	1	...	....	....	....	4	3	4	6
...	2	1	1	...	...	...	1	1	1	1	...	3	...	...	....	....	....	3	2	9	7
...	...	...	...	...	...	...	1	1	...	...	...	...	1	...	....	....	....	3	1	4	3
...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	....	....	1	1	2	3
...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	....	....	....	2	1	3	2
...	...	...	...	1	...	...	3	1	...	...	...	1	...	...	....	....	....	1	2	4	6
...	...	1	...	...	...	1	3	...	2	1	...	3	1	1	....	....	....	8	5	17	11
...	...	...	1	...	...	...	...	...	...	...	...	1	1	...	....	....	....	1	2	2	4
...	...	1	...	2	...	...	1	...	1	...	...	...	2	...	1	1	1	1	2	5	8
1	...	1	...	1	...	1	...	...	...	1	...	...	1	...	....	....	....	1	1	7	2
...	...	...	...	1	...	...	1	...	...	...	1	2	3	...	....	....	....	....	1	3	6
...	...	...	1	...	2	2	1	...	1	...	...	2	1	...	....	1	....	5	4	11	11
...	...	1	...	...	1	...	1	1	...	...	...	1	1	...	2	....	....	....	4	3	11
...	...	...	...	...	...	...	1	...	...	...	...	1	...	1	....	....	....	1	2	4	3
...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	....	2	....	....	3	2	6
...	...	...	...	...	...	1	...	...	...	...	...	...	1	...	1	1	....	3	2	5	4
...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	....	....	....	1	1	3	1
...	...	1	...	...	1	1	...	...	...	...	...	1	3	...	....	....	....	3	....	10	4
...	...	1	...	1	1	...	1	...	...	...	...	1	1	...	....	....	....	....	....	4	3
...	...	2	2	3	1	...	1	...	...	...	1	3	4	1	....	....	....	2	3	20	15
...	2	2	3	2	6	1	4	3	6	2	2	10	6	2	....	1	....	16	18	45	56
...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	....	....	....	1	....	1	1
1	...	1	1	...	1	1	...	...	...	...	1	3	1	...	....	....	....	4	3	11	6
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	....	....	....	4	....	5	....
...	...	2	1	1	...	...	...	...	...	...	...	3	4	...	....	....	1	....	3	6	11
...	...	...	1	...	...	1	1	...	...	...	1	1	1	...	....	....	1	....	2	2	9
...	...	...	...	...	...	...	1	...	...	...	2	1	...	...	....	....	....	....	3	5	6
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	....	....	....	....	....	....	....
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	....	....	....	....	....	....	....
...	...	...	...	...	...	...	1	...	...	...	...	3	2	...	....	....	1	....	4	4	10
...	...	...	...	...	1	...	...	...	...	...	1	...	2	...	....	....	....	....	3	....	7
...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	....	....	....	....	....	....	1
3	4	19	15	15	22	21	34	12	15	7	15	59	53	9	6	8	7	96	113	286	318

TABLE NO. 1 (CONTINUED).

AUGUST

	Spotted Fever		Smallpox		Tuberculosis		Diphtheria		Scarlet Fever		Measles		Typhoid Fever		Meningitis	
	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913
Beaverhead										1			1			
Broadwater																
Carbon															1	
Cascade Excl. of																
Great Falls					3	4				1				2		1
Chouteau																
Custer					2								1			
Dawson													1		1	
Deer Lodge Excl. of						4										
Anaconda					1	1										
Fergus													2	1		
Flathead Excl. of					2								1		1	
Kalispell																
Gallatin Excl. of					1											
Bozeman						1										
Granite							1									
Jefferson																
Lewis and Clark Excl. of										1						
Helena					1											
Lincoln																
Madison							1									
Meagher						1										
Missoula Excl. of						1										
Missoula City								1					1			1
Musselshell																
Park Excl. of																
Livingston					1											
Powell																
Ravalli	1				1								1			
Rosebud					2											
Sanders								1								
Silver Bow Excl. of					2	6										
Butte					3	4									1	
Sweet Grass																
Teton					1											1
Valley						1								1		
Yellowstone Excl. of					1											
Billings						1										
Blaine					1	1										
Big Horn																
Fallon																
Hill					1	1									1	
Sheridan																
Stillwater																
Totals	1				22	26	2	2		3			8	4	5	3

TABLE NO. 1 CONTINUED.

AUGUST

Whooping Cough		Pneumonia		Nephritis		Organic Heart Disease		Malignant Tumors		Acute Intestinal Diseases		Violence		Suicide		Accident		All other Causes		Totals	
1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913
...	...	...	...	2	...	1	...	...	1	...	...	4	1	...	1	...	...	2	1	14	8
...	...	...	...	1	...	...	1	...	...	1	...	...	...	...	...	...	...	...	...	2	1
...	...	...	...	...	1	...	1	...	...	...	1	...	...	1	1	...	...	3	3	5	12
...	...	1	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	3	6	5	7
...	...	...	1	...	1	...	2	2	1	1	3	4	5	...	1	2	...	6	10	13	31
...	...	1	1	...	...	...	...	...	...	...	4	...	...	...	...	...	...	3	1	4	6
...	...	1	...	...	1	1	...	...	...	2	1	...	3	...	1	...	...	4	3	11	14
...	...	...	2	...	...	...	2	...	1	...	4	6	2	...	1	...	...	3	5	11	17
...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	1	6	4	6	11
...	1	...	...	...	...	3	2	...	...	2	1	...	...	...	...	...	...	1	3	6	7
...	...	...	2	...	2	...	2	...	...	...	1	1	1	1	1	...	...	1	2	4	10
...	...	...	1	1	1	...	...	...	...	3	...	2	3	1	...	...	...	3	4	14	9
...	...	...	1	...	...	...	...	...	1	...	1	...	...	...	...	...	...	1	4	1	7
...	...	...	...	...	1	...	...	1	1	...	...	1	3	...	...	...	...	4	2	7	4
...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	1	...	3	1	5	4
...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	1
...	...	1	...	...	...	1	1	...	1	...	1	...	...	...	1	...	...	3	3	5	11
...	...	...	...	...	...	2	3	...	3	2	...	...	2	...	...	...	1	2	1	7	15
...	...	...	...	...	...	1	1	...	...	...	...	1	...	...	1	...	1	...	...	2	2
...	...	...	1	1	...	1	2	1	...	...	...	...	1	...	...	...	...	1	3	3	6
...	...	1	...	1	...	1	1	...	...	...	...	...	4	...	...	...	...	2	...	3	6
...	...	1	...	...	...	1	...	...	...	...	...	2	1	...	...	...	...	...	...	4	2
...	...	...	...	2	2	...	1	2	1	1	...	2	2	...	1	...	...	1	2	6	13
1	...	...	...	...	...	...	1	...	...	...	...	...	2	...	...	...	...	...	1	1	4
...	...	...	...	...	...	1	1	...	...	...	...	...	2	...	...	1	...	2	...	4	3
...	...	...	1	1	...	...	...	...	1	...	1	...	...	...	1	...	...	2	...	4	4
...	...	...	...	...	...	1	1	...	...	...	...	2	1	...	...	...	...	1	5	4	1
...	...	...	1	...	...	...	3	...	...	...	...	...	2	...	1	...	...	1	3	4	10
...	...	4	...	...	...	1	1	...	...	...	...	...	...	...	1	...	...	2	1	6	3
...	...	...	...	1	...	3	1	1	...	...	...	...	3	...	...	...	...	1	...	6	5
...	...	...	2	...	1	1	4	1	...	4	6	5	2	...	1	...	...	5	5	18	12
...	1	5	3	5	3	6	6	1	1	1	9	7	7	1	1	2	1	11	20	42	56
...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1
3	...	...	...	...	...	1	1	...	...	4	4	1	5	...	...	...	...	1	2	11	15
...	...	1	...	...	...	...	1	2	...	...	...	2	1	1	...	...	...	3	...	12	4
...	...	...	...	...	...	1	...	...	...	2	3	3	1	...	...	...	...	5	2	12	7
...	...	...	...	1	1	...	2	1	...	...	1	...	...	...	...	...	...	3	...	5	11
...	...	...	...	...	...	...	1	...	...	...	1	1	2	...	...	...	...	1	2	3	3
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	2	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	2	...	1	2	...	1	1	1	...	1	1	...	...	1	2	2	9	9
...	...	...	...	...	...	...	1	...	...	...	2	...	1	...	...	...	...	...	...	...	4
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	2	16	17	20	13	28	47	13	13	24	48	47	65	9	17	6	6	102	133	307	399

TABLE NO. 1 (CONTINUED).

SEPTEMBER

	Spotted Fever		Smallpox		Tuberculosis		Diphtheria		Scarlet Fever		Measles		Typhoid Fever		Meningitis	
	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913
Beaverhead	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Broadwater	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Carbon	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...
Cascade Excl. of	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Great Falls	...	...	...	...	3	2	...	2	...	...	...	...	2	3	...	...
Chouteau	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
Custer	...	...	...	...	...	...	...	...	...	1	...	...	2	...	...	...
Dawson	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...
Deer Lodge Excl. of	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...
Anaconda	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Fergus	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
Flathead Excl. of	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Kalispell	...	...	...	...	1	...	...	...	...	...	...	...	2	...	...	...
Gallatin Excl. of	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Bozeman	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1
Granite	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Jefferson	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Lewis and Clark Excl. of	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...
Helena	...	...	...	...	2	1	...	...	...	...	...	...	...	1	...	...
Lincoln	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Madison	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Meagher	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Missoula Excl. of	...	...	...	...	3	...	...	...	...	...	...	...	...	...	...	...
Missoula City	...	...	...	...	...	2	...	1	...	...	...	...	2	...	...	...
Musselshell	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Park Excl. of	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Livingston	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Powell	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ravalli	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Rosebud	...	...	...	...	6	...	...	...	...	...	...	...	...	...	...	...
Sanders	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...
Silver Bow Excl. of	...	...	...	...	6	6	...	...	...	1	...	...	...	...	...	...
Butte	...	...	...	...	5	1	...	...	...	...	...	...	...	1	...	...
Sweet Grass	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Teton	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...
Valley	...	...	...	...	2	2	...	...	...	...	...	...	...	...	...	...
Yellowstone Excl. of	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Billings	...	...	...	...	...	1	...	...	...	...	...	...	...	3	...	...
Blaine	...	...	...	...	2	...	...	...	...	...	...	...	...	1	...	...
Big Horn	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fallon	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hill	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Sheridan	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Stillwater	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Totals	1	...	...	...	38	21	...	3	...	3	...	...	10	13	1	1

TABLE NO. 1 (CONTINUED).

SEPTEMBER

Whooping Cough		Pneumonia		Nephritis		Organic Heart Disease		Malignant Tumors		Acute Intestinal Diseases		Violence		Suicide		Alcoholism		All Other Causes		Totals	
1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913
...	...	1	1	...	...	...	1	1	2	...	...	1	1	...	...	...	...	2	5	5	10
...	...	...	...	...	...	...	1	...	2	2	...	...	...	...	...	...	...	3	3	5	6
...	...	1	2	1	...	...	1	2	...	...	2	3	1	...	...	...	...	4	2	13	8
...	...	...	1	...	...	1	...	...	...	2	1	4	4	...	1	...	...	1	...	8	7
...	...	...	3	1	1	3	1	1	2	2	...	...	5	1	2	...	2	6	10	19	33
...	...	...	...	...	...	...	2	1	1	...	1	...	2	...	1	...	...	1	1	2	9
1	...	...	...	1	...	2	...	1	...	...	3	3	...	...	...	...	...	1	4	11	8
...	...	...	1	...	...	...	1	...	...	...	2	2	5	...	...	...	...	5	9	7	20
...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...	6	1	7	4
...	...	1	2	1	...	1	3	...	...	...	1	3	1	...	...	1	...	5	3	13	10
...	...	1	2	...	...	...	1	...	...	...	6	4	3	...	...	...	...	4	3	9	16
...	...	...	...	1	...	3	1	...	...	...	...	1	2	...	...	...	...	4	5	9	9
...	...	2	1	...	...	1	1	1	...	2	2	...	2	1	...	...	...	2	2	12	8
...	...	...	...	...	...	...	...	2	...	...	3	1	1	...	...	...	...	2	1	6	5
...	...	...	1	1	1	...	...	1	...	...	...	...	...	...	...	...	...	2	5	5	8
...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	2	...	3	2
...	...	1	...	...	...	1	1	1	...	...	...	3	...	1	...	...	1	3	3	10	5
...	...	...	1	2	...	...	...	...	...	...	1	2	...	...	...	...	...	3	...	7	4
...	...	...	1	1	3	2	1	...	6	...	1	2	2	1	...	...	...	5	6	13	22
...	...	...	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...	1	...	2	1
...	...	...	...	...	...	1	...	...	...	...	1	2	1	...	...	1	...	1	...	5	2
...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	1	2	1
...	...	...	1	...	...	...	...	1	...	...	...	1	2	...	...	...	...	2	4	7	7
...	...	2	...	1	1	1	4	...	2	...	1	...	...	...	...	...	...	7	9	13	20
...	...	...	2	...	...	...	...	...	1	...	4	...	...	...	2	...	...	...	1	...	10
...	...	2	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	2	3	2
...	...	1	1	...	...	1	1	1	1	2	2	...	...	...	...	...	...	3	1	9	6
...	...	...	1	...	...	1	1	...	...	...	2	...	1	...	...	...	...	...	2	1	7
...	...	...	1	1	1	...	2	...	...	1	...	...	...	...	...	...	...	3	3	7	7
...	...	1	...	...	...	...	...	...	1	...	...	4	3	...	...	...	...	1	1	13	4
...	...	...	...	...	...	1	...	1	...	1	...	...	...	...	1	...	...	1	2	3	6
...	...	1	...	...	1	1	6	1	2	...	3	6	4	...	...	...	...	6	2	21	25
...	...	6	3	5	2	3	8	2	2	3	6	7	8	2	3	1	1	17	16	51	51
...	...	...	...	...	...	...	...	...	...	...	...	4	1	...	...	...	...	1	1	5	2
...	...	...	...	...	...	...	...	...	...	...	4	1	1	...	...	2	...	3	8	8	13
1	...	2	1	...	...	2	...	1	...	1	2	3	2	...	...	1	...	5	4	18	11
...	...	...	...	1	...	1	...	...	1	...	1	...	1	...	1	...	...	4	1	6	5
...	...	...	...	1	...	...	1	1	1	1	2	...	2	...	...	...	...	3	2	5	12
...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	3	4	4
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	1	...	...	...	1	...	...	1	2	1	2	...	...	...	...	...	1	2	8
...	...	...	1	...	...	...	2	...	3	...	1	...	2	...	...	...	...	...	3	...	12
...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1
2	...	23	29	18	11	26	42	18	27	19	54	59	62	7	11	7	4	120	130	349	411

TABLE NO. 1 (CONTINUED).

OCTOBER

	Spotted Fever		Smallpox		Tuberculosis		Diphtheria		Scarlet Fever		Measles		Typhoid Fever		Meningitis	
	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913
Beaverhead	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...
Broadwater	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Carbon	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cascade Excl. of	...	...	...	...	1	3	...	...	...	1	...	...	...	...	...	1
Great Falls	...	...	...	...	...	2	...	...	...	...	...	...	...	2	...	...
Chouteau	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
Custer	...	...	...	...	2	...	...	...	...	...	...	...	...	4	1	...
Dawson	...	...	...	...	2	1	...	...	...	...	...	...	...	...	...	...
Deer Lodge Excl. of	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Anaconda	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...
Fergus	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...
Flathead Excl. of	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...
Kalispell	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Gallatin Excl. of	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bozeman	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...
Granite	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Jefferson	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Lewis and Clark Excl. of	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...
Helena	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...
Lincoln	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Madison	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...
Meagher	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Missoula Excl. of	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Missoula City	...	...	...	...	...	3	...	...	...	...	...	...	...	...	...	...
Musselshell	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Park Excl. of	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Livingston	...	...	...	...	3	1	...	...	...	...	...	...	...	...	...	...
Powell	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Ravalli	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Rosebud	...	...	...	...	4	...	...	...	...	...	...	...	...	1	...	...
Sanders	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Silver Bow Excl. of	...	...	...	...	4	5	...	...	...	1	...	...	...	...	...	...
Butte	...	...	...	...	7	11	...	...	1	1	...	...	...	...	2	3
Sweet Grass	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Teton	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Valley	...	...	...	...	1	1	...	...	...	...	...	...	...	1	...	...
Yellowstone Excl. of	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...
Billings	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...
Blaine	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...
Big Horn	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fallon	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hill	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...
Sheridan	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Stillwater	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Totals	...	...	...	...	36	33	...	...	2	3	...	...	2	14	5	4

TABLE NO. 1 (CONTINUED).

OCTOBER

Whooping Cough		Pneumonia		Nephritis		Organic Heart Disease		Malignant Tumors		Acute Intestinal Diseases		Violence		Suicide		Alcoholism		All Other Causes		Totals	
1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913
...	...	1	1	...	1	1	...	...	...	...	...	2	3	...	...	...	...	2	1	7	7
2	...	...	...	...	...	...	1	...	...	...	...	...	...	1	1	...	...	...	1	4	2
...	...	...	2	...	...	1	2	...	...	3	2	1	2	...	...	...	...	6	...	11	8
...	...	...	...	...	...	2	3	...	...	...	1	2	5	...	...	...	...	1	3	6	17
...	...	...	1	1	...	1	2	1	...	...	1	2	2	2	...	...	...	6	5	12	16
...	...	...	2	...	1	2	2	1	1	...	...	2	...	...	...	...	...	1	3	5	9
...	...	1	1	2	...	...	1	...	...	...	2	...	...	...	...	...	...	4	4	10	12
...	1	1	1	...	1	1	2	1	..	2	...	3	1	...	...	...	...	5	4	15	11
...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	8	4	8	6
...	...	...	...	3	...	2	1	1	...	1	...	2	1	...	...	...	1	6	8	17	11
...	...	1	1	1	...	1	...	1	2	...	1	3	2	...	1	...	...	4	11	12	19
...	...	...	1	...	1	...	1	...	1	...	3	1	2	...	...	...	...	2	1	4	11
...	...	1	...	...	...	...	...	...	1	...	3	...	...	...	...	...	...	1	...	2	4
...	...	1	...	...	...	...	1	...	...	...	1	1	...	...	...	...	...	1	1	3	3
...	...	...	2	2	2	1	...	1	...	...	1	...	...	...	1	1	...	2	1	8	8
...	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	1
...	...	...	...	...	...	2	...	...	...	...	1	...	2	...	...	1	...	1	1	3	6
...	1	2	...	2	4	...	...	2	...	...	...	1	...	...	...	1	1	1	4	10	10
...	...	3	...	...	2	6	3	...	1	...	...	2	1	...	...	1	4	6	16	16	15
...	...	...	1	...	...	...	1	...	1	...	2	3	2	...	...	...	...	...	...	3	7
...	...	...	...	...	...	...	2	...	1	...	...	...	...	...	...	1	...	4	3	5	8
...	...	1	...	1	...	1	1	...	...	...	...	2	...	...	...	1	...	1	3	7	4
...	...	...	...	...	...	...	...	...	1	...	...	1	1	...	...	...	...	...	2	1	4
...	...	2	2	1	2	...	2	1	1	...	...	2	...	...	...	...	1	6	5	12	16
...	...	1	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	3	1	5	2
...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	1	2	2	3
...	...	...	1	...	1	...	1	...	...	...	...	...	1	...	...	...	1	4	1	8	6
...	...	1	1	...	1	1	2	1	1	...	...	1	1	...	...	...	...	1	1	6	7
...	...	1	2	...	1	1	1	1	...	...	...	...	...	...	...	...	...	3	3	6	7
...	...	3	1	1	...	...	...	...	...	...	...	...	1	...	...	...	...	5	...	13	3
...	...	...	...	...	...	...	...	...	1	...	1	...	1	...	...	...	...	...	1	...	4
...	...	2	1	1	...	2	1	1	1	...	1	6	...	...	...	...	...	4	9	20	19
...	...	6	9	...	5	9	2	2	1	...	3	4	8	...	3	3	1	18	18	52	65
...	...	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	3	1	4	2
2	...	...	1	2	...	...	1	...	...	...	1	...	1	...	...	...	...	5	2	10	6
...	...	...	...	1	...	1	1	...	...	...	...	2	3	...	...	1	...	3	1	9	7
...	...	...	...	...	...	...	1	...	...	...	...	1	2	...	...	...	...	2	1	4	5
...	...	...	3	1	3	...	3	...	...	...	1	...	1	1	...	...	1	2	7	5	20
...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	1	...	3	1
...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	2	....
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	2	...	2	1	2	2	...	...	...	1	...	4	...	1	...	...	1	2	9	11
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	2
...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	1	...	3
4	2	31	36	22	25	34	44	15	16	6	26	48	48	4	7	9	7	122	123	340	388

TABLE NO. 1 (CONTINUED).

NOVEMBER

	Spotted Fever		Smallpox		Tuberculosis		Diphtheria		Scarlet Fever		Measles		Typhoid Fever		Meningitis	
	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913
Beaverhead																
Broadwater				1												
Carbon															1	
Cascade Excl. of																
Great Falls						1	1							3	1	1
Chouteau														1		
Custer					1		2									
Dawson					1	1							1	2		
Deer Lodge Excl. of					2	3										
Anaconda						1										
Fergus									1			1		1	1	1
Flathead Excl. of						1										
Kalispell															1	
Gallatin Excl. of							1									
Bozeman					1								1	1	1	
Granite															1	
Jefferson																
Lewis and Clark Excl. of																
Helena					4	1										
Lincoln																
Madison					1											
Meagher						1								1		
Missoula Excl. of																
Missoula City					2							1				
Musselshell																
Park Excl. of															2	
Livingston																
Powell					1											
Ravalli						1										
Rosebud					3								1			
Sanders																
Silver Bow Excl. of					5	5				1						
Butte					11	8			1					1		2
Sweet Grass																
Teton					1											
Valley					2											
Yellowstone Excl. of							2							1		
Billings													1			
Blaine																
Big Horn					2											
Fallon																
Hill					1		1									
Sheridan						1								1		
Stillwater																
Totals				1	38	24	5	1	2	1		2	4	12	8	4

TABLE NO. 1 (CONTINUED).

NOVEMBER

Whooping Cough		Pneumonia		Nephritis		Organic Heart Disease		Malignant Tumors		Acute Intestinal Diseases		Violence		Suicide		Alcoholism		All Other Causes		Totals	
1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913
...	...	...	1	...	...	...	2	1	1	...	...	...	1	...	...	...	...	...	...	1	5
...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	2
...	...	...	...	...	...	...	3	...	...	...	...	...	2	...	...	...	...	3	1	4	6
...	...	1	1	...	...	...	...	...	...	...	2	...	1	...	...	...	...	...	3	3	5
...	...	6	2	1	1	2	2	2	3	...	...	1	...	...	1	...	...	6	10	20	24
...	...	...	3	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	3	...	8
...	...	...	2	2	...	1	1	...	...	...	...	1	1	...	...	1	...	3	6	10	10
...	...	...	1	...	...	...	1	...	...	1	...	...	2	...	...	...	...	7	1	10	8
...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	9	5	13
...	...	1	3	...	2	4	3	1	1	...	1	1	...	2	...	1	...	3	5	13	16
...	...	2	...	1	1	...	1	...	...	...	1	3	3	...	...	...	...	7	6	15	15
...	...	...	2	...	...	1	...	...	1	...	...	2	2	...	...	...	...	2	4	5	10
...	...	1	...	1	1	...	2	...	1	...	...	...	1	...	...	...	...	1	3	4	8
...	...	...	...	...	...	...	...	...	...	1	...	1	1	...	...	...	...	8	3	10	5
...	...	...	...	1	...	1	...	...	1	...	...	...	...	...	...	1	...	1	3	6	6
...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	2	4	2
...	...	...	...	...	...	1	2	...	...	...	...	1	...	...	...	1	1	1	1	4	4
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	4	1	3	3	3	2	...	1	...	...	1	2	...	...	...	...	9	7	24	17
...	...	...	...	...	...	2	1	...	...	...	1	1	1	1	...	...	...	1	...	5	3
...	...	1	1	...	...	...	2	...	1	1	...	...	...	...	...	...	...	2	4	5	8
...	...	...	...	1	1	2	...	...	...	...	...	1	...	...	...	...	...	1	2	5	5
...	...	1	...	...	...	2	...	...	...	...	...	3	1	...	...	...	...	6	2	12	3
...	...	1	1	...	1	1	...	...	2	...	...	2	1	1	...	...	1	7	8	14	15
...	...	2	...	...	...	...	...	...	...	...	...	1	...	1	1	...	...	1	2	5	3
...	...	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	1	...	4	1
...	...	...	...	...	...	...	...	...	...	...	1	1	1	...	...	...	...	3	2	4	4
...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	2	5	5	6
...	...	...	...	...	1	1	3	3	2	1	...	...	...	...	...	...	...	1	1	6	8
...	...	1	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	1	1	7	2
...	...	1	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	2	...	3	2
...	...	2	2	1	1	2	3	1	...	1	...	2	3	...	...	...	1	2	5	16	21
1	...	7	8	2	3	5	7	2	5	1	...	5	7	2	...	3	3	12	21	52	65
...	...	2	1	1	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...	5	1
2	...	4	1	...	...	...	2	...	1	...	1	1	1	...	...	2	...	1	5	9	13
...	...	...	...	1	...	1	...	...	...	...	...	...	2	...	...	...	...	5	2	9	4
...	...	1	...	...	...	...	...	...	...	...	2	1	...	...	...	...	...	4	2	8	5
...	...	1	1	1	1	2	...	...	...	...	...	1	...	1	...	2	...	5	3	14	5
...	...	...	1	...	...	1	...	...	...	...	...	1	...	...	...	...	...	1	1	3	2
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	1	...	1	...	...	...	1	...	...	3	3	1	1	...	...	1	1	7	8
...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	3	...	7
...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	1	...	...	...	...	...	3
3	...	42	35	16	18	33	43	10	22	8	7	38	37	9	4	8	9	116	137	340	357

TABLE NO. 1 (CONTINUED).

DECEMBER

	Spotted Fever		Smallpox		Tuberculosis		Diphtheria		Scarlet Fever		Measles		Typhoid Fever		Meningitis	
	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913
Beaverhead	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Broadwater	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Carbon	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Cascade Excl. of	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	1
Great Falls	...	...	...	...	2	1	...	...	1	1	...	...	...	1	...	1
Chouteau	...	...	...	...	2	1	...	...	...	...	...	...	...	...	...	...
Custer	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...
Dawson	...	...	...	...	1	1	...	...	...	...	...	...	...	...	1	...
Deer Lodge Excl. of	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Anaconda	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fergus	...	...	...	...	3	...	...	...	...	...	...	...	...	1	1	...
Flathead Excl. of	...	...	...	...	1	3	...	...	...	...	...	...	...	1	...	...
Kalispell	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	1
Gallatin Excl. of	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bozeman	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Granite	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Jefferson	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Lewis and Clark Excl. of	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Helena	...	...	...	...	...	...	...	...	...	...	...	...	2	1	...	...
Lincoln	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
Madison	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...
Meagher	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Missoula Excl. of	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Missoula City	...	...	...	...	4	...	...	...	...	...	...	...	...	...	1	...
Musselshell	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Park Excl. of	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...
Livingston	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	1
Powell	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...
Ravalli	...	...	...	...	2	2	...	...	...	...	...	...	...	...	...	...
Rosebud	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Sanders	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Silver Bow Excl. of	...	...	...	...	4	5	...	...	1	...	...	...	...	...	...	...
Butte	...	...	...	...	5	8	...	...	...	...	...	...	...	1	1	...
Sweet Grass	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Teton	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...
Valley	...	...	...	...	2	...	...	2	...	...	...	...	1	...	...	1
Yellowstone Excl. of	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...
Billings	...	...	...	...	...	2	...	...	...	...	1	...	...	...	...	...
Blaine	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Big Horn	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fallon	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hill	...	...	...	...	2	...	...	...	...	...	...	...	1	1	...	...
Sheridan	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Stillwater	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Totals	...	...	...	...	34	31	...	2	2	1	...	3	6	10	7	5

TABLE NO. I (CONTINUED).

DECEMBER

Whooping Cough		Pneumonia		Nephritis		Organic Heart Disease		Malignant Tumors		Acute Intestinal Diseases		Violence		Suicide		Alcoholism		All Other Causes		Totals	
1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913
...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	....	4	1	6
...	...	...	1	...	1	...	...	...	...	...	...	1	...	...	...	...	...	2	1	4	2
...	...	3	...	1	1	1	5	...	...	...	...	2	2	...	...	...	...	1	3	9	11
...	...	1	...	...	...	...	2	1	...	...	...	1	1	...	...	...	...	1	1	5	6
1	...	4	6	...	1	5	1	...	1	...	...	1	4	...	3	1	....	12	5	27	25
...	...	...	1	...	...	...	...	...	1	...	1	...	2	...	...	...	2	2	3	4	11
...	...	1	...	...	...	1	3	1	1	...	...	...	...	...	...	...	2	2	4	6	11
...	...	...	1	...	...	...	...	...	1	...	...	1	1	...	...	...	...	4	9	7	13
...	...	1	2	...	...	1	2	...	...	...	...	...	1	...	1	...	...	11	9	13	15
...	...	4	1	1	1	...	...	...	...	...	1	2	...	...	1	...	2	1	4	8	10
...	...	3	1	...	1	...	...	...	...	...	...	3	...	...	...	1	....	4	7	15	10
...	...	1	1	...	...	...	...	...	...	...	...	1	2	...	...	1	....	3	2	7	9
...	...	...	...	1	...	2	...	1	1	...	2	...	...	...	...	....	1	2	1	7	7
...	1	...	1	1	...	...	2	2	...	...	...	...	...	...	...	....	....	3	3	6	7
...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	....	....	5	5	6	6
...	...	2	...	...	...	...	...	...	...	1	...	...	2	...	...	....	....	....	2	3	4
...	...	...	...	...	1	...	...	...	...	...	...	2	...	...	...	....	....	....	1	2	3
...	...	1	...	...	2	...	2	...	1	1	...	...	1	...	...	....	....	....	1	2	7
...	...	2	1	3	1	...	1	2	1	2	...	...	2	1	...	....	....	7	4	19	11
...	...	1	...	...	1	1	...	...	1	...	...	1	...	...	1	....	....	1	2	4	6
...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	1	....	....	2	2	5	4
...	...	1	...	...	...	1	2	...	...	...	...	1	1	...	...	....	....	3	....	6	3
...	...	3	1	...	...	...	1	...	1	...	...	4	2	1	...	....	....	4	3	10	11
...	...	3	2	1	...	4	2	2	1	...	...	1	...	...	1	....	....	9	4	25	10
...	...	1	1	...	...	...	...	...	...	...	1	...	...	...	...	....	....	1	2	2	4
...	...	...	...	...	...	...	...	...	...	...	1	1	1	...	...	....	....	2	4	4	7
...	...	2	...	...	...	...	...	...	...	...	...	1	...	...	...	....	....	2	4	6	6
...	...	3	1	...	...	...	...	...	...	...	...	1	...	...	...	1	....	3	2	10	3
...	...	1	...	...	1	2	...	...	...	...	...	...	2	...	...	1	....	4	2	9	8
...	...	3	...	...	...	1	...	...	...	...	...	1	1	...	...	....	....	4	....	10	1
...	...	...	1	...	1	...	...	...	...	...	...	1	3	...	...	....	....	1	1	2	6
...	...	2	3	2	1	...	1	...	4	1	...	2	3	...	...	....	....	4	5	16	22
...	1	18	12	3	2	5	12	3	3	1	1	2	6	1	2	4	1	20	15	63	64
...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	....	....	....	1	1	2
1	...	2	2	1	...	...	...	...	...	...	2	1	4	...	...	1	1	8	1	15	11
...	...	4	1	...	1	2	1	...	...	...	...	...	1	...	...	....	....	8	3	17	10
...	...	...	1	...	1	4	...	1	...	...	...	...	1	1	...	....	....	1	3	7	8
1	...	2	2	1	...	3	3	...	1	...	...	1	1	...	...	....	....	5	3	13	13
...	...	1	2	...	...	...	...	...	...	...	...	...	1	...	...	....	....	1	3	2	6
...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	....	....	....	....	2	....
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	....	....	....	....	....	....
...	...	3	1	2	...	...	1	1	1	...	...	1	...	...	...	....	1	3	2	13	7
...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	....	....	....	2	....	5
...	...	...	...	...	2	...	1	...	...	...	...	...	...	...	1	....	....	....	....	....	4
3	2	73	49	18	19	34	43	15	20	6	9	36	46	4	11	9	11	146	133	393	395

TABLE NO. 1 (CONTINUED).

TOTALS

	Spotted Fever		Smallpox		Tuberculosis		Diphtheria		Scarlet Fever		Measles		Typhoid Fever		Meningitis	
	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913
Beaverhead	..	...	...	...	1	4	...	...	...	2	...	1	1	1	2	...
Broadwater	...	...	...	1	1	3	...	...	...	...	...	...	...	...	...	2
Carbon	...	1	...	...	6	2	...	...	1	...	...	...	1	...	2	2
Cascade Excl. of	...	...	...	...	3	7	...	...	...	8	...	1	1	...	...	2
Great Falls	...	...	...	...	19	19	1	2	1	17	...	2	3	18	2	7
Chouteau	...	...	...	...	8	3	1	...	...	2	1	...	...	5	...	...
Custer	...	...	...	...	10	9	1	2	...	1	...	...	3	5	1	2
Dawson	...	...	...	...	8	8	1	1	...	2	...	...	5	7	2	...
Deer Lodge Excl. of	...	...	...	...	3	19	...	...	...	...	...	...	...	...	...	...
Anaconda	...	...	...	...	7	3	...	...	...	...	...	...	...	...	1	3
Fergus	...	...	...	...	5	3	...	...	2	12	...	1	4	10	2	12
Flathead Excl. of	...	...	...	...	9	8	...	...	1	1	...	...	1	4	2	...
Kalispell	...	...	...	...	3	2	...	...	...	...	...	...	3	1	2	3
Gallatin Excl. of	...	...	...	...	4	4	...	1	1	1	...	...	1	...	...	1
Bozeman	...	...	...	...	2	2	...	...	...	...	...	...	2	2	1	1
Granite	...	1	...	...	2	3	1	...	...	...	...	...	1	...	1	...
Jefferson	...	...	...	...	4	2	...	...	...	1	1	2	1	...	...	...
Lewis and Clark Excl. of	...	...	...	...	4	1	...	1	...	3	...	...	1	...	1	1
Helena	...	...	...	...	25	3	...	...	...	3	...	...	2	4	...	1
Lincoln	...	...	...	1	...	1	...	...	...	1	1	...	...	1	...	2
Madison	...	...	...	...	4	7	1	...	...	...	...	1	...	...	1	1
Meagher	...	...	...	...	1	2	...	...	...	...	...	1	1	1	1	1
Missoula Excl. of	...	...	...	...	15	8	...	...	...	...	...	...	1	...	1	...
Missoula City	2	3	...	...	13	15	...	2	...	...	...	2	6	...	3	3
Musselshell	...	...	...	...	2	4	...	...	...	...	...	...	1	...	...	1
Park Excl. of	...	...	...	...	1	2	...	...	...	...	...	...	1	2	3	...
Livingston	...	...	...	...	7	6	1	...	...	...	...	...	1	1	...	1
Powell	...	...	...	...	6	2	...	...	...	2	...	...	1	...	...	...
Ravalli	6	3	...	...	9	7	...	...	...	1	...	...	1	...	...	2
Rosebud	...	...	...	...	39	1	...	...	...	...	...	...	3	1	...	...
Sanders	...	...	...	...	2	3	...	1	...	...	...	...	1	...	1	1
Silver Bow Excl. of	...	...	...	...	56	68	1	...	12	3	...	1	1	1	3	4
Butte	...	...	...	...	91	105	...	...	4	19	...	7	1	3	12	19
Sweet Grass	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Teton	...	...	3	...	36	7	...	2	1	1	...	1	1	...	2	3
Valley	...	...	...	...	28	8	...	2	...	...	...	1	1	2	1	2
Yellowstone Excl. of	...	...	...	...	13	3	2	3	1	...	...	1	...	2	...	...
Billings	...	...	...	...	5	10	...	...	...	...	...	1	2	5	...	3
Blaine	...	...	...	...	12	8	...	...	...	1	...	...	...	1	1	...
Big Horn	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...
Fallon	...	...	...	...	...	1	...	...	...	...	...	...	...	2	...	...
Hill	...	...	...	...	6	6	1	...	1	1	3	...	2	1	1	1
Sheridan	...	...	...	...	...	4	...	...	...	...	...	...	...	1	...	...
Stillwater	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Totals	8	8	3	2	472	385	11	17	25	82	6	23	55	81	49	81

TABLE NO. I (CONTINUED).

TOTALS

Whooping Cough		Pneumonia		Nephritis		Organic Heart Disease		Malignant Tumors		Acute Intestinal Diseases		Violence		Suicide		Alcoholism		All Other Causes		Totals	
1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913
...	...	5	9	4	3	5	7	2	5	...	...	10	9	2	1	1	1	19	23	52	66
2	...	2	1	3	2	3	5	2	4	4	1	7	2	2	1	....	....	12	11	38	33
2	...	13	11	3	7	10	16	3	2	4	9	14	16	2	2	1	....	45	38	107	106
3	1	8	11	2	...	5	9	3	2	6	6	21	23	2	5	1	2	18	30	73	107
3	1	21	34	9	13	26	29	10	17	5	9	14	30	8	10	7	4	74	119	203	331
...	...	4	16	1	1	3	9	5	6	...	7	6	8	...	2	....	2	20	25	49	86
1	2	6	7	11	8	9	10	2	1	5	6	12	15	...	5	2	2	35	46	98	121
1	1	4	21	3	4	8	11	2	6	3	12	24	25	1	3	1	1	49	56	112	158
...	...	1	4	2	2	4	10	...	1	...	...	4	1	1	2	2	1	88	82	105	122
...	1	12	23	12	12	23	16	4	1	5	4	11	7	3	5	3	4	44	59	125	138
...	...	8	24	9	6	9	12	6	3	...	11	20	19	4	3	2	3	44	69	115	188
1	3	4	17	8	6	11	13	3	6	4	5	19	27	3	4	1	2	41	42	108	138
...	...	7	7	7	2	6	9	4	7	2	9	2	6	2	....	1	2	22	22	61	70
...	3	4	10	3	4	6	13	10	4	2	4	12	11	1	1	....	....	36	26	80	83
...	...	3	7	8	9	3	11	10	6	...	1	1	1	...	1	2	1	30	28	62	70
...	...	5	5	1	...	1	1	...	1	1	...	4	6	...	1	1	1	13	12	31	31
...	...	5	3	4	2	4	9	3	1	...	2	7	4	1	2	3	2	18	20	51	50
...	1	9	3	13	14	3	14	4	3	1	2	6	4	2	....	1	2	13	20	58	69
...	2	16	21	13	20	24	20	11	19	5	1	15	16	6	6	2	3	65	68	184	187
...	...	1	6	1	1	6	4	1	4	2	3	9	13	2	2	....	1	10	8	33	48
...	...	6	9	8	2	4	12	2	5	6	2	6	8	1	2	4	1	21	23	64	73
2	...	6	3	4	2	9	7	...	2	1	1	7	13	1	....	2	....	15	17	50	50
6	...	10	9	5	...	5	9	3	5	...	1	27	22	2	1	....	2	28	37	103	94
2	...	26	17	9	16	17	19	12	16	4	1	17	14	3	4	3	6	59	70	176	188
4	1	11	8	...	1	3	4	1	1	...	7	7	7	2	8	....	....	12	19	43	61
2	...	12	3	3	2	1	7	3	...	...	2	8	7	1	....	2	1	23	19	60	45
4	2	4	9	7	1	4	5	2	4	2	4	3	7	...	1	2	2	22	27	59	70
...	...	10	7	...	6	10	6	1	1	1	3	5	9	...	2	2	1	21	29	57	68
...	...	4	11	4	8	10	15	5	4	2	...	3	8	2	1	....	1	31	30	77	91
...	...	25	3	1	2	4	4	2	1	...	...	20	13	...	2	....	1	20	7	114	35
...	1	3	3	4	2	4	7	1	3	...	1	4	16	...	1	....	1	16	12	36	52
...	1	24	26	14	18	15	24	5	9	10	17	40	42	2	3	2	3	50	55	235	275
1	10	82	122	36	49	54	89	27	32	17	27	68	72	14	16	21	14	196	225	624	809
...	...	3	2	1	1	2	2	1	1	...	...	10	5	...	....	....	....	16	15	33	27
10	...	16	21	4	2	5	10	1	2	5	14	12	19	1	....	3	3	56	50	156	135
2	...	16	10	3	1	13	6	6	1	4	4	15	14	4	....	3	....	55	23	151	74
1	...	17	11	5	3	7	5	3	2	2	9	13	13	2	2	....	1	37	25	103	80
2	...	14	18	10	8	13	13	4	4	3	8	11	8	3	4	2	4	34	48	103	134
...	...	3	9	3	1	3	6	...	...	1	6	4	6	1	1	1	....	11	24	40	63
...	...	4	1	...	...	1	...	...	2	...	...	...	...	...	...	...	...	1	....	8	3
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	....	....	3
...	...	6	8	8	5	8	21	3	3	5	4	14	14	2	5	....	4	16	44	76	117
...	...	...	6	...	1	...	5	...	3	...	4	...	10	...	1	....	....	....	15	....	50
...	...	...	...	...	2	...	8	...	1	...	...	...	2	...	2	....	1	....	3	....	20
49	30	440	556	246	249	361	512	167	201	112	207	512	572	83	112	78	80	1436	1621	4113	4819

TABLE NO. II.

DEATHS FROM ALL CAUSES REPORTED TO THE STATE BOARD OF HEA
ING TO CAUSE OF DEA

Sex	M	F	M	F	M	F	M	F	M	F	M
Age	Under 1	1	1 to 2		2 to 3		3 to 4		4 to 5		5to
I. GENERAL DISEASES											
Typhoid Fever			3		2	3			1		1
Small Pox											
Measles		1	1				1	1			
Scarlet Fever		1	1	2	2	1	2	5	2		3
Whooping Cough	12	16	4	2	1	3		1	1	3	3
Diphtheria					3		1	2	1		2
Croup			1								
Grippe (Influenza)	4										
Spotted (Tick) Fever											
Erysipelas				2							
Septicaemia	5	1									
Tubercle of the Lungs	4	4	6	2	4	1	2	2	1	1	5
Tubercle of Meninges	3	1		1		2		1		1	1
Tubercle of Peritoneum											
Other Tuberculoses						1					
Syphilis	2	1									
Cancer of Stomach and Liver											
Cancer of Peritoneum and Intestines											
Cancer of Female Genital Organs											
Cancer of Breast											
Cancer of Skin											
Cancer of Organs not Specified											
Other Tumors	2					1					2
Rheumatism, Acute Articular			1								
Rheumatism, Chronic and Gout											
Diabetes		1					1	1		1	
Anaemia and Chlorosis											
Alcoholism, Acute and Chronic											
Chronic Poisonings											
Coitre		1									
Addison's Disease											
II DISEASES OF THE NERVOUS SYSTEM AND ORGANS OF SPECIAL SENSE											
Encephalitis		1									
Meningitis, Simple	6	4	2			1	1	1	1	1	3
Meningitis, Cerebro Spinal	3	1	3		2	2	1			1	
Cerebro Congestion and Hemorrhage											
Cerebral Softening											
Paralysis											
General Paralysis of Insane											
Other forms of Mental Alienation											
Epilepsy											1
Convulsions of Children	10	6									
Chorea											
Tetanus	1										
Other Diseases of Nervous System					1						1
Diseases of Ear and Adenexa				1							
Infantile Paralysis	2	1				1		2	2		1

TABLE NO. II.

LTH FOR THE YEAR ENDING DECEMBER 31, 1912. ARRANGED ACCORD-TH,, AGE AND SEX.

F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
10		10to15		15to20		20to30		30to40		40to50		50 t	60	60to7.		70 to 8	Over 8		Total		Total persons
		3	5	1	14	3	10	4		1	2		2						40	15	55
		2	1																1	2	3
1					1														2	3	5
3			2			1													12	13	25
3																			21	28	49
1	1																		8	3	11
																			1		1
												1		1		1	3	1	7	4	11
					2		1		3			1				1			8		8
										1	2								4	3	7
				1	1	1	3	3	7			3	1			2	1		21	8	29
8	5	3	9	22	40	39	60	19	80	23	55		10	17	3	5	2	1	2	294	141	435
3		1							1											5	10	15
					1	2	1	1	1					1					1	4	3	7
					4		1	1	1		4			2		1				13	2	15
						1			2		2					1				7	2	9
							1	2	11	7	21		6	12	6	4	4	2		51	25	76
						1	1	2		5	2		1	3	2	2				8	11	19
										11			5		4		1				21	21
								2		5					2		1		1		11	11
						1					2		1	2	1	3		1		8	3	11
						2	1			1	5		1	3	2	4	2	1		14	8	22
1	1			1					1	6				3	1	1				10	10	20
										1										2		2
											1	1	1		1					1	3	4
1	2	1	1		3		5		1	1	6		1	1			1			20	8	28
								1	3		2									5	1	6
					4	1	15	1	27	1	17		3	5	1	3				71	7	78
						1	1	2		1	1									2	4	6
										2											3	3
									1											1		1
																					1	1
1		3			4		1													18	10	28
					3	1	2		1				1							15	6	21
					1		5	2	8	4	22		7	31	14	27	17	13	4	107	48	155
											3			1	1	2	1	1		7	2	9
											4			3	2	5	2	2	2	14	6	20
											3			1		1	1			5	1	6
					6	4	5	3	14	1	17		5	7	1	4	3	2	1	55	18	73
	1		1		1	1	2	3	2		2									10	4	14
																				10	6	16
							1													1		1
									1											2		2
	1		1			1	1	2	2	2	3		1	1	2	2	1			13	9	22
1	1						1	1	1	2								1		4	5	9
		1	1				1													7	5	12

TABLE NO. II (CONTINUED).

Sex	M	F	M	F	M	F	M	F	M	F	M
Age	Under 1	1	1 to 2		2 to 3		3 to 4		4 to 5		5to
III											
DISEASES OF CIRCULATORY SYSTEM											
Pericarditis											
Endocarditis		2	1	1							3
Other Diseases of Heart	2	4					1				4
Diseases of Arteries (Atheroma Aneurism)											
Angina Pectoris											
Embolism and Thrombosis											
Diseases of Lymphatic System						1					
Hemorrhages	2	1									
IV.											
DISEASES OF RESPIRATORY SYSTEM											
Diseases of Larynx					1					1	
Bronchitis, Acute	11	5	1		1	1	1				1
Bronchitis, Chronic											
Pneumonia	58	33	13	14	4	3		1		2	3
Pleurisy											
Asthma											
Pulmonary Emphysema											
Empyema											
V.											
DISEASES OF DIGESTIVE SYSTEM											
Tonsilitis											1
Ulcer of Stomach	1										
Other Diseases of Stomach	1										
Diarrhoea and Enteritis under 2	45	32	3	9							
Diarrhoea and Enteritis Chronic						1					
Diarrhoea and Enteritis over 2					5	6	1		1	2	
Hernia and Intestinal Obstruction	9	2									2
Cirrhosis of Liver	1										
Biliary Calculi											
Other Diseases of Liver		1									
Diseases of Spleen											
Appendicitis and Abscess of Iliac Fosse						1			1	1	1
Peritonitis, Simple	2		1			1					1
VI.											
DISEASES OF GENITO URINARY SYSTEM AND ADENEXA											
Nephritis, Acute	1		1	1	1	1	1				1
Brights Disease					1						
Disease of the Bladder											
Disease of the Prostate											

TABLE NO. II (CONTINUED).

F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
10	10 to 15		15 to 20		20 to 30		30 to 40		40 to 50		50 t		60	60 to 70		70 to 80		Over 80		Total		Grand Total
...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1
2	5	4	2	3	10	6	15	14	14	10	21	1 2	27	7	19	11	4	4	121	76	197
...	...	3	...	2	7	6	8	4	14	5	18	7	27	9	14	9	4	4	99	53	152
...	...	...	...	...	...	...	...	...	...	...	6	...	5	...	5	1	7	1	23	2	25
...	...	...	...	...	...	...	...	...	2	...	3	1	2	1	1	...	...	1	8	3	11
...	...	...	...	...	...	...	1	2	...	...	3	2	1	...	1	...	...	...	6	4	10
...	...	...	...	...	...	...	1	...	1	1	2	...	...	...	...	...	...	...	4	2	6
...	...	...	...	1	...	...	1	...	...	...	1	...	...	...	1	...	...	...	5	2	7
...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	2	1	3
...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	1	1	18	7	25
...	...	...	...	...	...	...	...	...	3	...	3	1	1	1	2	2	1	...	10	4	14
5	1	5	6	1	21	8	27	17	40	4	46	23	27	13	16	21	11	17	273	167	440
...	...	...	...	...	...	...	...	...	1	1	1	...	...	...	...	...	...	1	2	2	4
1	...	...	...	...	...	1	1	...	...	2	5	...	2	...	2	...	...	1	10	5	15
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	1	...	...	1	...	...	...	...	...	1	...	1	...	...	...	...	...	3	1	4
...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	2	...	2
...	...	...	...	...	3	...	4	2	5	...	4	1	4	...	1	...	...	...	22	3	25
...	...	...	...	...	...	1	1	...	...	...	1	...	1	...	4	1	...	...	8	2	10
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	48	41	89
...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...	2	1	3
1	1	...	...	...	...	...	2	...	...	...	1	...	1	...	...	2	...	...	12	11	23
...	...	1	...	...	1	3	3	3	3	3	4	2	3	1	3	...	...	...	28	15	43
...	...	...	...	...	...	1	1	2	6	2	10	1	3	1	6	...	...	...	27	7	34
...	...	...	...	...	...	...	...	...	1	1	...	2	...	1	1	1	1	...	3	5	8
...	1	...	...	...	...	1	1	1	...	...	1	3	...	3	1	...	...	...	4	9	13
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	4	1	3	3	10	3	7	3	5	...	3	2	1	1	1	...	...	...	36	19	55
1	...	4	1	...	4	7	3	3	...	...	4	1	1	...	...	1	...	...	17	18	35
...	...	1	...	1	1	...	1	3	4	2	4	...	1	2	1	1	3	...	20	12	32
1	...	1	1	2	6	4	9	3	19	15	31	10	36	11	33	13	14	4	150	64	214
...	...	...	1	...	1	1	1	...	...	...	...	...	2	...	1	...	...	...	6	1	7
...	...	...	...	...	...	...	...	...	1	...	...	...	2	...	5	...	2	...	10	...	10

TABLE NO. II (CONTINUED).

Sex	M	F	M	F	M	F	M	F	M	F	M
Age	Under 1	1	1 to 2		2 to 3		3 to 4		4 to 5		5to
VII.											
THE PUERPERAL STATE											
Accidents of Pregnancy	....	....	....	....	....	....	....	....	....	....	....
Accidents of Labor	....	....	....	....	....	....	....	....	....	....	....
Septicaemia, Puerperal	....	....	....	....	....	....	....	....	....	....	....
Albuminuria and Eclampsia	....	....	....	....	....	....	....	....	....	....	....
VIII.											
DISEASE OF SKIN AND CELLULAR TISSUES											
Gangrene	....	....	....	....	....	....	....	....	....	....	....
Carbuncle	....	....	....	....	....	....	....	....	....	....	....
IX.											
EARLY INFANCY											
Congenital Debility, Icterus and Scleroma	199	120	....	....	....	....	....	....	....	....	....
X.											
OLD AGE											
Senility	....	....	....	....	....	....	....	....	....	....	....
XI.											
EFFECTIONS PRODUCED BY EXTERNAL CAUSES.											
Suicide by Poisons	....	....	....	....	....	....	....	....	....	....	....
Suicide by Hanging and Strangulation	....	....	....	....	....	....	....	....	....	....	....
Suicide by Drowning	....	....	....	....	....	....	....	....	....	....	....
Suicide by Firearms	....	....	....	....	....	....	....	....	....	....	....
Suicide by Cutting Instruments	....	....	....	....	....	....	....	....	....	....	....
Other Suicides	....	....	....	....	....	....	....	....	....	....	....
Accidents with Firearms	....	....	....	....	....	....	....	....	....	....	3
Railroad Accidents	....	....	....	....	....	....	....	....	....	....	1
Accidents with Horses and Vehicles	....	....	....	....	....	....	....	....	1	....	4
Mine Accidents	....	....	....	....	....	....	....	....	....	....	....
Other Accidental Traumatisms	2	4	1	....	1	1	....	....	....	....	....
Burns and Scalds	1	2	2	2	1	1	2	1	....	....	1
Isolation and Freezing	....	....	....	....	....	....	....	....	....	....	....
Electrical (Other than Lightning)	....	....	....	....	....	....	....	....	....	....	....
Lightning	....	....	....	....	....	....	....	....	....	....	....
Accidental Drowning	....	....	3	2	2	1	1	1	....	....	3
Accidental Poisoning	1	1	1	2	2	1	1	....	1	....	1
Homicide	1	....	....	....	....	....	....	....	....	....	1
Legal Execution	....	....	....	....	....	....	....	....	....	....	....
Mill Accidents	....	....	....	....	....	....	....	....	....	....	....
Auto Accidents	....	....	....	....	....	....	....	....	....	....	....
XII.											
DEATHS FROM ILL-DEFINED CAUSES AND STILL-BIRTHS											
Unspecified and Ill-Defined	14	20	6	2	2	....	1	1	....	1	3
Still-births	165	119	....	....	....	....	....	....	....	....	....
Totals	407	267	55	43	36	34	18	20	13	15	57

TABLE NO. II (CONTINUED).

F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	Grand Total
10	10 to 15		15 to 20		20 to 30		30 to 40		40 to 50		50 t	060	60 to 70		70 to 80		Over 80		Total		
...	...	...	...	...	...	12	...	5	...	...	...	...	...	...	...	...	...	...	...	17	17
...	...	...	...	1	...	5	...	12	...	2	...	...	...	...	...	...	...	...	...	20	20
...	...	...	...	2	...	9	...	16	...	1	...	...	...	...	...	...	...	...	...	28	28
...	...	...	...	3	...	4	...	3	...	2	...	...	...	...	...	...	...	...	...	12	12
...	...	...	...	...	...	...	...	...	1	...	2	..	...	1	....	....	2	1	2	5	7
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	199	120	319
...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	8	10	28	12	36	24	60
...	...	...	...	...	4	3	4	3	3	2	1	1	3	...	....	....	....	....	15	9	24
...	...	...	...	...	1	1	3	...	2	...	2	...	1	1	....	....	....	....	9	2	11
...	...	...	...	...	...	1	...	1	...	...	1	...	...	...	....	....	....	....	1	2	3
...	...	...	...	...	9	1	9	1	9	...	4	...	2	...	....	....	....	....	33	2	35
...	...	...	...	...	1	...	5	...	2	...	...	...	...	...	....	....	....	....	8	....	8
...	...	...	...	...	...	...	1	...	...	...	...	...	1	...	....	....	....	....	2	....	2
...	5	2	4	1	13	...	8	...	5	...	...	...	1	...	....	....	....	....	39	3	42
...	1	...	2	...	28	...	25	...	21	1	6	...	3	...	....	....	....	....	87	1	88
1	2	...	2	...	15	...	7	1	9	1	4	...	4	...	1	....	....	....	49	3	52
...	...	...	...	...	20	...	25	...	7	...	3	...	2	...	....	....	....	....	57	....	57
...	...	1	3	1	21	...	17	2	12	...	3	...	4	...	2	....	2	....	68	9	77
1	...	...	...	...	3	1	1	2	2	...	3	1	...	...	1	....	1	....	18	11	29
...	...	...	...	...	2	...	1	...	1	...	3	...	1	...	4	....	....	....	12	....	12
...	...	...	...	...	3	...	2	...	...	...	...	...	...	...	...	....	....	....	5	....	5
...	...	...	1	...	2	...	3	...	...	...	...	...	...	...	...	....	....	....	6	....	6
...	4	...	4	...	15	1	10	...	7	...	5	1	...	...	....	....	....	....	54	6	60
...	...	...	1	1	3	1	1	1	2	...	1	...	2	1	....	....	....	....	17	8	25
...	...	...	1	1	10	1	25	2	7	2	1	1	1	...	....	....	....	....	47	7	54
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	....	....	....	....	1	....	1
...	...	...	...	...	2	...	...	...	1	1	...	...	...	...	....	....	....	....	3	1	4
2	1	...	2	1	5	7	5	8	11	7	10	2	15	4	10	8	4	3	89	66	155
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	165	119	284
42	36	38	56	49	307	150	358	163	391	140	406	118	286	103	214	121	109	61	2914	1483	4397

Estimated population, 1912 405,257

Annual death rate per 1,000 population 10.1

TABLE NO. III.

DEATHS FROM ALL CAUSES REPORTED TO THE STATE BOARD OF ACCORDING TO CAUSE

Sex	M	F	M	F	M	F	M	F	M	F	M
Age	Under 1	1	1 to 2		2 to 3		3 to 4		4 to 5		5to
I. GENERAL DISEASES											
Typhoid Fever			1		1	2					1
Small Pox	1										
Measles	3	1	5	5	1	1		1			1
Scarlet Fever	1		7		10	4	4	3	2	2	12
Whooping Cough	10	9	1	4		3		1			1
Diphtheria		1	3		1	1		2		1	3
Croup	1			1			1	1			
Grippe (Influenza)		1	1								
Spotted (Tick) Fever											
Erysipelas	2	3		1							
Septicaemia	4	2									1
Tubercle of the Lungs	2	1	2	1		1	1	1		1	4
Tubercle of Meninges	2	1		1	2	2	1				3
Tubercle of Peritoneum		1									
Other Tuberculoses											
Syphilis	1										
Cancer of Stomach and Liver											
Cancer of Peritoneum and Intestines											
Cancer of Female Genital Organs											
Cancer of Breast											
Cancer of Skin											
Cancer of Organs not Specified											
Other Tumors					1				1		2
Rheumatism, Acute Articular											
Rheumatism, Chronic and Gout											
Diabetes	1										
Anaemia and Chlorosis			1					1			2
Alcoholism, Acute and Chronic											
Chronic Poisonings											
Goitre											
Addison's Disease											
Disease of Panceas											
II DISEASES OF THE NERVOUS SYSTEM AND ORGANS OF SPECIAL SENSE											
Encephalitis											
Meningitis, Simple	8	2	2	2	2	2		1			1
Meningitis, Cerebro Spinal	1	1	4	2	1	2	3		1		
Cerebro Congestion and Hemorrhage	2	1									
Cerebral Softening											
Paralysis											
General Paralysis of Insane											
Other forms of Mental Alienation											
Epilepsy											
Convulsions of Children	13	12			1						
Chorea											
Tetanus											
Other Diseases of Nervous System	2	2									
Diseases of Ear and Adenexa	1										1
Infantile Paralysis	1	1	1	1		1		1	1		

TABLE NO. III.

HEALTH FOR THE YEAR ENDING DECEMBER 31, 1913, ARRANGED OF DEATH, AGE AND SEX.

F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
10	10to15		15to20		20to30		30to40		40to50		50 t	060	60to70		70 to 80		Over 80		Total		Grand Total
..	3	2	3	3	24	4	19	1	8	2	1	2	3	1	....	....	....	....	64	17	81
...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	2	....	2
..	...	2	...	2	...	1	...	...	...	...	...	...	...	...	...	...	...	...	10	13	23
11	4	6	1	2	2	6	1	3	1	...	...	...	...	...	...	...	...	...	45	37	82
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	12	18	30
1	...	...	...	...	...	1	...	1	1	...	1	...	...	...	...	...	...	...	9	8	17
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	4	6
..	...	...	1	...	...	...	1	1	...	...	...	1	...	...	1	....	3	1	7	4	11
1	1	...	...	...	...	1	...	2	...	...	...	...	3	...	...	...	...	...	4	4	8
..	...	...	...	...	...	...	1	...	2	1	3	...	1	...	...	...	...	...	9	5	14
...	2	...	...	1	5	10	5	7	5	5	2	4	6	1	2	1	...	...	32	31	63
...	...	3	4	8	35	17	76	20	79	11	37	3	27	3	6	4	....	1	273	75	348
1	...	1	1	1	...	2	...	...	...	1	...	...	...	...	...	...	...	...	9	10	19
..	1	...	...	...	1	1	...	2	...	1	1	...	...	...	...	...	...	...	3	5	8
1	...	...	...	...	3	2	3	...	1	...	...	...	...	...	...	...	...	...	7	3	10
...	1	...	...	...	1	1	1	2	1	1	1	1	1	..	....	....	....	....	7	5	12
..	...	...	...	...	...	...	1	6	14	4	10	11	19	7	10	2	1	....	55	30	85
..	...	...	...	...	...	...	...	...	2	5	...	3	3	2	2	1	....	....	7	11	18
...	...	...	...	...	...	2	...	6	...	7	...	6	..	3	....	4	....	....	....	28	28
..	...	...	...	...	...	1	...	1	...	2	...	3	...	2	....	1	....	....	....	10	10
..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	....	....	....	....	....
...	...	...	...	...	...	1	3	1	4	2	10	2	8	4	5	1	....	....	30	11	41
1	2	...	...	...	2	2	8	3	4	4	...	3	3	1	....	1	....	....	23	15	38
...	1	...	1	...	...	1	1	...	...	...	1	1	2	...	....	1	....	....	6	3	9
...	...	...	...	...	1	...	...	1	...	...	...	...	...	...	....	2	....	....	1	3	4
...	2	2	...	1	4	1	1	3	3	4	1	1	...	9	2	2	1	....	15	23	38
...	3	...	...	...	...	1	1	...	2	1	4	3	2	1	1	....	....	....	15	7	22
...	...	...	...	...	2	2	17	7	24	3	19	...	4	1	....	....	1	....	67	13	80
...	...	...	...	...	...	1	2	...	2	...	1	...	1	1	....	....	....	....	6	2	8
...	...	...	...	1	...	...	...	2	1	...	...	2	...	1	....	....	....	....	1	6	7
...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	....	....	....	....	1	1	2
...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	....	....	....	....	1	....	1
...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	1	....	....	30	13	43
1	2	1	2	1	3	...	5	2	3	...	...	...	...	...	....	....	....	....	28	10	38
1	1	1	1	1	7	2	7	...	1	...	1	11	24	11	28	16	7	4	108	53	161
...	...	...	...	...	2	...	8	3	11	7	26	...	1	...	....	....	1	....	5	....	5
...	...	...	...	...	...	...	...	...	3	...	...	1	1	1	2	3	1	....	19	5	24
...	...	...	1	...	1	...	2	...	2	...	9	...	3	...	2	....	2	....	42	....	42
...	...	...	...	...	2	...	6	...	18	...	9	2	2	...	....	....	....	....	9	11	20
...	...	...	...	...	1	3	2	4	2	2	2	1	3	1	2	....	....	....	16	2	18
...	...	...	3	...	4	...	...	...	1	...	3	...	...	...	....	....	....	....	14	13	27
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	....	....	....	....	1	4	5
1	...	2	...	1	...	...	...	...	1	...	...	...	...	...	....	....	....	....	3	1	4
...	1	...	...	...	2	1	...	...	...	...	...	...	...	...	....	....	....	....	14	7	21
...	...	1	...	1	2	1	3	1	5	...	...	2	2	...	....	1	....	....	11	2	13
...	...	...	...	...	1	...	2	...	3	...	2	..	...	...	1	....	....	....	3	4	7

TABLE NO. III (CONTINUED).

Sex	M	F	M	F	M	F	M	F	M	F	M
Age	Under 1	1	1 to 2		2 to 3		3 to 4		4 to 5		5to
III											
DISEASES OF CIRCULATORY SYSTEM											
Pericarditis											1
Endocarditis											3
Other Diseases of Heart	27	14	2				1	1			
Diseases of Arteries (Atheroma Aneurism)											
Angina Pectoris											
Embolism and Thrombosis		1									
Diseases of Lymphatic System	1										
Hemorrhages	5	7				1					
IV.											
DISEASES OF RESPIRATORY SYSTEM											
Diseases of Larynx					2						
Bronchitis, Acute	12	9	1	4	1	1	1	1		1	1
Bronchitis, Chronic											
Pneumonia	74	49	16	14	6	6	6	1	1	4	12
Pleurisy											
Asthma											
Pulmonary Emphysema											
Empyema						1					
V.											
DISEASES OF DIGESTIVE SYSTEM											
Tonsilitis		1				1		2			
Ulcer of Stomach											
Other Diseases of Stomach	4	2									1
Diarrhoea and Enteritis under 2	62	58	23	11							
Diarrhoea and Enteritis Chronic					1						
Diarrhoea and Enteritis over 2					11	8	5	4	1	2	4
Hernia and Intestinal Obstruction	7	2	1						1		2
Cirrhosis of Liver						1					
Biliary Calculi						1					
Other Diseases of Liver	1										
Diseases of Spleen											
Appendicitis and Abscess of Iliac Fosse			1							2	4
Peritonitis, Simple	2		3		1		1			2	
VI.											
DISEASES OF GENITO URINARY SYSTEM AND ADENEXA											
Nephritis, Acute			1	2	1	1			1		2
Brights Disease											
Disease of the Bladder											
Disease of the Prostate											
Pyonephrosis											

TABLE NO. III (CONTINUED).

F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
10	10to15		15to20		20to30		30to40		40to50		50 t	060		60to70		70 to 80		Over 80		Total		Grand Total
										2	1								4		4
1		2		1	3	3	2	4	5	1	7	4	3	1	3	2			26	19	45
3	7	3	8	2	19	9	21	14	44	27	58	16	55	32	40	16	17	13	299	150	449
			1				1	2	1		4	1	11	1	4	4	8	4	30	12	42
								2	1		3	2	4		2				10	4	14
		1	2		2	2	1	1	2	5	3		3	1	2				15	11	26
																			1		1
1			2		1		3		2	1	4		4	1	2			1	23	12	35
								1			1								3	1	4
1							1					1			1	1			18	19	37
											2	1	1	1	1	1	1	3	5	6	11
6	3	6	4	4	17	13	45	11	65	10	57	11	36	11	30	19	15	4	387	169	556
		1						1						1			1		1	3	4
							1		1		3	1	2	2	2		2		11	3	14
															1		1		2		2
			1	1		1			1		1		3						6	3	9
			1						1								1		3	4	7
				3	1	2	4	2	4	1	4	1	2	1					15	10	25
					2	2	2		1		3	1	2	1	4		1		20	6	26
																			85	69	154
												1	1			1	1		3	2	5
2					1	1		1	3		1	1	4	1	1	1	1		32	21	53
1		1			2	2	2	5	2	3	3	3	1		5		1		27	17	44
					1	2	4	2	6	3	10	2	10		2		1		34	10	44
					1				1	2		1				1			2	5	7
			1		1	1		1		2	4	3	2	1			1		10	8	18
5	2	2	3	5	11	10	17	5	10	3	3	1		1					51	34	85
1	1		1	3	3	6	2	5	3	2	3				1				21	19	40
2	2	1	2		2	5	4	4	6	1	5		2	2			1		29	18	47
	1	1	1	1	2	5	14	7	20	10	28	10	29	17	29	12	10	5	134	68	202
					1				2				2		1		1		7		7
					1				2		1		1		2		2		7		7
					1															1	1

TABLE NO. III (CONTINUED).

Sex	M	F	M	F	M	F	M	F	M	F	M
Age	Under 1	1	1 to 2		2 to 3		3 to 4		4 to 5		5to
VII.											
THE PUERPERAL STATE											
Accidents of Pregnancy	...	...	...	...	...	...	...	...	...	...	...
Accidents of Labor	...	...	...	...	...	...	...	...	...	...	...
Septicaemia, Puerperal	...	...	...	...	...	...	...	...	...	...	...
Albuminuria and Eclampsia	...	...	...	...	...	...	...	...	...	...	...
VIII.											
DISEASE OF SKIN AND CELLULAR TISSUES											
Gangrene	...	...	...	...	...	...	1	...	...	...	...
Carbuncle	...	...	...	...	...	...	...	...	...	...	...
IX.											
EARLY INFANCY											
Congenital Debility, Icterus and Scleroma	160	140	1	1	1	1	...	1	...	...	...
X.											
OLD AGE											
Senility	...	...	...	...	...	...	...	...	...	...	...
XI.											
EFFECTIONS PRODUCED BY EXTERNAL CAUSES.											
Suicide by Poisons	...	...	...	...	...	...	...	...	...	...	...
Suicide by Hanging and Strangulation	...	...	...	...	...	...	...	...	...	...	...
Suicide by Drowning	...	...	...	...	...	...	...	...	...	...	...
Suicide by Firearms	...	...	...	...	...	...	...	...	...	...	...
Suicide by Cutting Instruments	...	...	...	...	...	...	...	...	...	...	...
Other Suicides	...	...	...	...	...	...	...	...	...	...	...
Accidents with Firearms	...	...	...	...	...	...	...	...	...	...	3
Railroad Accidents	...	...	...	...	...	...	...	...	1	...	2
Accidents with Horses and Vehicles	...	...	...	...	...	...	...	...	1	1	...
Mine Accidents	...	...	...	...	...	...	...	...	...	...	...
Other Accidental Traumatisms	2	2	...	...	1	1	...	1	1	...	...
Burns and Scalds	...	1	1	1	2	1	...	4	1	2	...
Isolation and Freezing	...	...	...	...	...	...	...	...	...	...	1
Electrical (Other than Lightning)	...	...	...	...	...	...	...	...	...	...	...
Lightning	...	...	...	...	...	...	...	...	...	...	...
Accidental Drowning	...	...	3	2	2	...	1	...	1	...	2
Accidental Poisoning	...	...	3	...	1	1	...	...	1	...	...
Homicide	...	1	...	...	...	...	...	...	...	...	...
Legal Execution	...	...	...	...	...	...	...	...	...	...	...
Mill Accidents	...	...	...	...	...	...	...	...	...	...	...
Auto Accidents	...	...	...	...	...	...	...	...	...	...	...
XII.											
DEATHS FROM ILL-DEFINED CAUSES AND STILL-BIRTHS											
Unspecified and Ill-Defined	19	7	...	...	...	...	...	1	...	...	1
Still-births	179	100	...	...	...	...	...	...	...	...	...
Totals	432	333	84	53	50	44	26	28	15	18	71

Estimated population for 1913 418,529

Annual death rate per 1,000 population 11.5

TABLE NO. III (CONTINUED).

F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	Grand Total
10	10 to 15		15 to 20		20 to 30		30 to 40		40 to 50		50 t	:060	60 to 70		70 to 80		Over 80		Total		
...	...	...	...	...	...	8	...	7	...	...	...	...	...	...	...	...	...	...	15	15	15
...	...	...	...	...	...	10	...	5	...	...	...	...	...	...	...	...	...	...	15	15	15
...	...	...	...	2	...	14	...	6	...	...	...	...	...	...	...	...	...	...	22	22	22
...	...	...	...	...	...	7	...	3	...	1	...	...	...	...	...	...	...	...	11	11	11
...	...	...	...	...	...	1	3	...	...	...	1	...	3	...	2	1	...	...	10	2	12
...	...	...	...	...	...	...	...	...	1	...	2	...	...	1	...	...	...	...	3	1	4
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	162	143	305
...	...	...	...	...	...	...	...	...	...	...	...	...	4	1	23	7	18	24	45	32	77
...	...	...	1	3	6	8	3	3	3	...	6	1	1	1	...	...	...	...	20	16	36
...	...	...	...	...	...	...	2	...	2	...	1	...	...	1	1	...	...	...	6	1	7
...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	2	...	2
...	...	...	...	...	7	1	14	1	14	1	10	...	6	...	1	...	...	...	52	3	55
...	...	...	...	...	2	...	3	...	3	...	2	...	...	...	1	...	...	...	11	...	11
...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	1
...	4	...	4	...	2	...	3	2	1	1	...	...	...	...	...	1	...	...	17	4	21
...	2	...	5	...	43	1	26	...	16	...	18	...	4	...	2	1	1	...	120	2	122
2	3	...	1	1	13	...	17	...	11	...	10	...	3	1	3	...	...	...	62	5	67
...	...	...	1	...	29	...	22	...	14	...	8	...	1	...	...	...	...	...	75	...	75
...	1	...	2	...	16	...	25	1	13	...	17	...	2	1	3	...	2	...	85	6	91
...	...	...	...	...	1	4	1	1	1	3	...	1	...	...	...	...	...	...	7	18	25
...	...	...	...	...	3	...	5	...	4	...	2	...	...	...	1	...	2	...	18	...	18
...	...	...	...	...	2	...	2	...	1	...	...	...	...	...	1	...	...	...	6	...	6
...	...	...	...	...	4	...	...	...	2	...	2	...	...	...	...	...	...	...	8	...	8
2	7	...	9	2	10	2	11	...	9	...	3	...	...	1	...	...	...	...	58	9	67
...	...	...	...	...	2	1	1	1	3	1	2	...	...	1	...	...	...	...	13	5	18
...	...	...	1	...	11	...	10	...	8	...	8	1	1	...	...	...	...	...	39	2	41
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	3	2	2	...	4	...	...	1	...	1	...	...	...	...	9	4	13
1	2	...	2	1	1	4	12	4	8	4	10	1	8	2	1	2	2	3	66	30	96
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	197	100	297
51	58	39	71	52	332	194	462	181	509	145	456	129	331	136	237	111	108	63	3421	1677	5098

TABLE NO. IV.

*BIRTHS REPORTED TO THE STATE BOARD OF HEALTH DURING THE TWO YEARS ENDING DECEMBER 31ST, 1913.

	Males—1912	Males—1913	Females—1912	Females—1913	Totals—1912	Totals—1913
Beaverhead	41	51	40	41	81	92
Broadwater	38	42	32	31	70	73
Carbon	191	151	174	128	365	279
Cascade Excl. of	123	156	104	123	227	279
Great Falls	253	285	237	296	490	581
Choteau	52	58	58	45	110	103
Custer	143	145	117	130	260	275
Dawson	164	183	180	159	344	342
Deer Lodge Excl. of	10	10	3	7	13	17
Anaconda	126	127	117	136	243	263
Fergus	173	178	163	159	336	337
Flathead Excl. of	121	138	99	125	220	263
Kalispell	96	93	92	96	188	189
Gallatin Excl. of	105	108	117	86	222	194
Bozeman	77	92	89	90	166	182
Granite	27	28	31	25	58	53
Jefferson	42	47	35	38	77	85
Lewis and Clark Excl. of	60	34	49	33	109	67
Helena	157	126	111	133	268	259
Lincoln	31	56	42	55	73	111
Madison	82	65	71	65	153	130
Meagher	61	61	66	67	127	128
Missoula Excl. of	104	65	80	55	184	120
Missoula City	164	147	128	147	292	294
Musselshell	93	118	69	99	162	217
Park. Excl. of	36	33	34	25	70	58
Livingston	73	78	77	74	150	152
Powell	49	49	48	50	97	99
Ravalli	120	106	116	98	236	204
Rosebud	48	48	54	45	102	93
Sanders	34	31	25	28	59	59
Silver Bow. Excl. of	183	166	142	148	325	314
Butte	434	497	402	453	836	950
Sweet Grass	45	41	35	46	80	87
Teton	133	154	114	127	247	281
Valley	186	129	163	102	349	231
Yellowstone Excl. of	126	124	139	114	265	238
Billings	138	155	122	155	260	310
Blaine	37	73	37	79	74	152
Big Horn	....	12	....	147	....	159
Hill	67	145	78	8	145	153
Sheridan	....	66	....	75	....	141
Stillwater	....	34	....	34	....	68
Total births	4243	4505	3890	4177	8133	8682
Total Deaths					4397	5098
Excess of births over deaths					3736	3584

*The year 1912 is inclusive of stillbirths and the year 1913 is exclusive of stillbirths. This change was made in 1913 to conform with the Federal Method.

FOOD AND DRUG DEPARTMENT.

One of the duties of the State Board of Health is to enforce the Food and Drug law in the State. The county and local health officers were made food and drug inspectors by this law.

Through the local and county health officers this work has been done along the lines of improving the sanitary conditions in all places where food products are manufactured and handled. In fact our energies have been centered largely on carrying out the sanitary features of the law. The total number of inspections made by the local and county health officers are as follows:

	1913	1914
Dairies	3144	1943
Hotels and Restaurants	5900	4221
Meat Markets and Slaughter Houses	2743	1951
Bake Shops and Confectioneries	1017	747
Other Places of Business	4287	3117

The total number of inspections made by the special inspector during 1913 and the first nine months of 1914 are as follows:

	1913	1914
Dairies	66	77
Hotels and Restaurants	402	584
Meat Markets and Slaughter Houses	156	229
Bake Shops and Confectioneries	47	65
Other Places of Business	12	78

At each inspection a score card was made out and forwarded to this office. The inspector made a note on this score card of any insanitary conditions found. These score cards were checked over in the office and if the score fell low and the place of business was reported as being insanitary, a warning letter was sent from the office and the party given a certain time within which to clean up and comply with the law, and the regulations of the State Board of Health.

Very often only one letter was necessary, but if the warning was disregarded and no improvement resulted before the next inspection, the party as a rule was summoned to appear

before the State Board of Health and show cause why his license should not be revoked. Often the parties have appeared before the Board and offered various excuses, which resulted in their being given an extended time to effect the improvements recommended, and as a rule the promises made at said meeting have been fulfilled. When the parties ignored the warning and failed to appear before the State Board of Health when summoned, their licenses have been promptly revoked, but this has occurred in only four cases. Of the parties whose licenses were revoked only one continued to do business, but he was promptly arrested, prosecuted and fined. Then he cleaned up.

A detailed report of the number of inspections made in each county will be found on page —— of this report.

We do not believe that the work of a Department should be gauged by the number of prosecutions. Our aim has been to avoid prosecution. We have tried to get the co-operation of the business men rather than antagonize them. We feel that we have gotten better results by adopting this policy. In the Spring of 1913 we started a campaign on soft drinks. At that time we found that nearly all of those manufactured in the State contained saccharine. This was an illegal ingredient. On a later examination of these products no saccharine was found in any of them. There were no prosecutions.

We herewith submit the report of our special inspector, F. J. O'Donnell, and also the laboratory report of Professor W. M. Cobleigh. These will indicate to some extent the work performed by this Department.

Helena, Montana, November 21, 1914.

Dr. W. F. Cogswell, Secretary,
State Board of Health,
Helena, Mont.

Dear Doctor:—Complying with your request, I herewith submit a brief report of the work done by me as Special Inspector for the Department of Public Health for the years 1913 and 1914, to date.

During this time I have inspected grocery stores, meat markets, slaughter houses, restaurants, hotel dining rooms and kitchens, lunch counters, ice cream parlors and factories, confectionery and bake shops, dairies, creameries, cold storage plants and warehouses in the following cities and towns throughout the State:

Helena
Marysville
Augusta
Gilman
Elliston
Avon
Garrison
Drummond
Philipsburg
Missoula
Stevensville
Victor
Hamilton
Ravalli
St. Ignatius
Ronan
Polson
Dixon
Paradise
Plains
Camas Springs
Thompson Falls
Alberton
St. Regis
Iron Mountain
Superior
Saltese
Taft
East Helena
Winston
Townsend
Toston
Radersburg
Lombard
Logan
Manhattan
Belgrade
Bozeman
Livingston
Wilsall
Clyde Park
Chico Springs
Emigrant
Corwin Springs
Gardiner
Big Timber
Columbus
Park City
Laurel
Billings
Hardin
Joliet
Red Lodge
Fromberg
Belfry
Bridger
Huntley
Worden
Pompey's Pillar
Custer
Hysham
Forsyth
Rosebud
Miles City
Glendive
Wibaux
Yates
Sidney
Mondak
Snowden
Bainville
Froid
Homestead
Medicine Lake
Plentywood
Poplar
Wolf Point
Glasgow
Hinsdale
Malta
Harlem
Zortman
Landusky
Whitcomb
Chinook
Havre
Kremlin
Gildford
Hingham
Rudyard
Inverness
Joplin
Chester
Galata
Dunkirk
Shelby
Cut Bank
Belton
Columbia Falls
Kalispell
Whitefish
Eureka
Rexford
Libby
Troy
Box Elder
Big Sandy
Fort Benton
Carter
Floweree
Great Falls
Sand Coulee
Stockett
Collins
Choteau
Bynum
Dupuyer
Aznoe
Power
Dutton
Conrad
Valier
Cascade
Craig
Wolf Creek
Clancy
Alhambra
Jefferson
Corbin
Wickes
Boulder
Basin
Butte
Anaconda
Whitehall
Deer Lodge
Galen
Twin Bridges
Alder
Virginia City
Pony
Norris
Melrose
Dillon
Geyser
Lima
Stanford
Windham
Benchland
Moccasin

Utica	Two Dot	Lewistown
Hobson	Harlowton	Grass Range
Buffalo	Roundup	Hilger
Judith Gap	Melstone	Coffee Creek
Broadview	Terry	Denton
Three Forks	Baker	Geraldine
Ringling	Straw	
White Sul. Springs	Moore	

I have visited all of these towns once, most of them twice and the larger cities I have inspected several times, making a total of one thousand, three hundred sixty-four (1364) inspections.

During the past year I have noticed a great improvement in regard to the sanitary condition of places in which food stuffs are handled, or sold, as compared with what I found during the latter part of 1912, but there is still room for considerable improvement, especially in the smaller towns where there is no sewer system, and no public water supply. In these towns, septic tanks or cesspools are sometimes provided, but, as a rule, the very insanitary practice of throwing slops and refuse on the ground in the rear of the building, or just outside of the kitchen door, seems to prevail, and as a consequence, during the warmer months this accumulation of filth becomes a feeding ground and breeding places for flies which infest the kitchens and dining rooms and become a nuisance and a menace to the community.

The regulations provide that covered cans shall be provided for all kitchens. While this law is pretty generally observed throughout the State, still there are places where it is observed only when there is danger of an inspector appearing on the scene.

The grocery stores throughout the State, I find with very few exceptions, in good condition. Occasionally I find moldy hams and bacon, or sometimes decayed vegetables in the rear store rooms or in the basement, but these conditions are usually remedied as soon as I call the attention of the proprietor to them. I have found a few illegal brands of canned goods, but these are mostly all old stock which have not been cleaned out since the Pure Food Law went into effect. Owing to the fact that most of the canned goods offered for sale in this State have to run the gauntlet of Federal inspection, we have very little trouble with illegal or misbranded goods.

I have purchased samples in different parts of the State, of the various brands of canned goods, evaporated milk, coffees, spices, extracts, etc., also ice cream, butter and soft drinks, a list of which follows:

Milk	169	Boiled Cider	1
Butter	12	Maple Syrup	1
Cream	33	Canned Cherries	1
Ice Cream	24	Canned Vegetables	7
Oleomargarine	1	Catsup	1
Evaporated Milk	5	Sea Foods	25
Soft Drinks	114	Soup	6
Extracts	13	Coffee	6
Candy	10	Vinegar	1
		Lard	3
	381		52

These samples numbering four hundred thirty-three, were sent to the Food and Drug Laboratory at Bozeman, for analysis.

There has been a great improvement surrounding the slaughter houses in the State. While there are still some very poor buildings used as slaughter houses in the State, they are few in number, as practically all of the butchers doing their own slaughtering have rebuilt, or remodeled, their slaughter houses in the past two years. The greatest difficulty is in getting them to properly dispose of their refuse and offal and to provide adequate drainage, and while a great many of the buildings are properly constructed and fly screens provided, I find that the employes are very careless about keeping the screens closed. In some instances the hide room is so located that the odors from it permeate both the killing room and the cooling room. Nearly all of the slaughter houses in the State are now constructed with cement floors, but very often I find that they are not properly washed after each slaughtering and in some instances, the water supply is not adequate.

There could be considerable improvement in the meat markets throughout the State. Of those inspected, I have found none in a very insanitary condition, still there is room for improvement. Some of the butchers still adhere to the old idea that they cannot make sales or meet competition unless they have all of the meat in the shop displayed and ex-

posed to contamination from dust, dirt and flies, and try to shield their practice behind the regulation which grants them the privilege of exposing only such meats as may be in immediate demand.

I have purchased several samples of suspected illegal meat preservatives, but as yet, have found none. On one occasion I found a barrel of meat in the rear of a market which had a layer of green mould about one inch thick over it, and which did not appear to be fit for human consumption. When I questioned the proprietor he informed me that he had had the meat for some two months and also told me tht he could keep the meat for six months longer. I immediately suspected the meat had been preserved with some illegal preservative and destroyed the same at once by drenching it with kerosene. Usually the dirtiest place about a meat market is the sausage room. If a butcher is at all careless, it is very evident from the condition of his sausage room, where the machinery is not cleaned after using and where the floor is dirty and littered with scraps of meat and other refuse. When these sausage rooms are in the basement they are sometimes too low to connect with the sewer, and as a result, it is very hard to keep them in a proper sanitary condition.

The biggest problem we have in this State today, and the one to which I have devoted a large portion of my time, is trying to get the restaurant and hotel kitchens to comply with the rules and regulations of the State Board of Health.

While I can see a great improvement and it is very encouraging to notice the change, still, regular inspection and instruction is about the only method that will bring the desired results. To visit some of the hotels and restaurants during the winter months, one would find them in first class condition, while to visit the same places in the summer would find the place infested with flies, the garbage cans at the rear door without covers on, and inefficient fly screens on doors and windows. While on the other hand, you may visit restaurants and hotels in the summer which are in very good sanitary condition and free from flies, but during the winter months you would find very insanitary conditions existing, caused by throwing the slops and other refuse out the rear door, until there is a small mountain of filthy ice within a few feet of the kitchen. But gradually the hotel and restaurant proprietors

are beginning to realize that if they do not allow an accumulation at the rear of the kitchen during the winter, they will not have a filthy mess to clean up in the Spring, and also that during the summer by keeping their premises in the rear of the building in a cleanly condition and keeping their garbage and refuse in covered cans, they eliminate a great many of the flies which otherwise would be a nuisance and a menace in the kitchen.

The regulations adopted by the State Board of Health abolishing the common roller towel and the common drinking cup, is being pretty generally observed throughout the State. In a few instances it has taken considerable argument to convince the proprietor of the necessity of abolishing these carriers of disease, and in some instances, a threatened prosecution has had the desired effect.

We have a great number of confectionery and bake shops in the State located in basements, and while the majority are kept in fairly good condition, the only ventilation that most of them have are windows usually about even with the street grade, and when these windows are opened for ventilation there is no protection to the bake room from the street dust. As a rule the windows are equipped with 14 mesh wire gauze, which is too coarse to keep out the street dust and dirt. All such confectionery and bake shops should be equipped with not less than 40 mesh to the inch screen, which will protect it to a certain extent from dust and dirt and should be thoroughly cleaned with a stiff wire brush at least twice each week.

I would recommend that a regulation be passed by the State Board of Health prohibiting any confectionery or bake shop in the future, from locating in any basement or other place where the floor is below the street level, and where proper ventilation cannot be had without danger from contamination by street dust. The principal cause of insanitary conditions is undoubtedly carelessness, together with the fact that in such places the buildings are unfit for bake shops and these conditions are found mostly in the smaller towns, where the baker does not do enough business to warrant him hiring extra help and where his busines does not pay a material profit. As a consequence, he is unable to make the necessary improvements.

Since the office of State Dairy Commissioner was created I have made very few inspections of dairies, as that feature of

the work was provided for by the Legislature in the Dairy Commission Bill. But in those dairies I have inspected, is shown a marked improvement as compared with conditions I found in 1912. At present dairy inspection in this State is very unsatisfactory, owing to the fact that there seems to be a conflict between the Dairy Commission Law and the Food and Drugs Act.

During August, 1913, there were nine prosecutions in Butte, of persons selling milk containing Formaldehyde, and a conviction was secured in each case, the fines ranging from ten to fifty dollars and costs, in each case. During July, 1914, there were five prosecutions of restaurant men in Great Falls, for selling adulterated milk and a conviction secured in each case. The fines were each, twenty-five dollars and costs.

In March, 1914, I was instrumental in prosecuting a case against a rancher in Chouteau county for contaminating a public water supply, and a conviction was also secured in this case.

In all of the above cases, the county attorney's office of the different counties gave the Department their fullest co-operation and vigorously prosecuted each case brought to their attention.

We have not had many prosecutions under the Pure Food law, as it has been the policy of the Pure Food Department not to prosecute, but rather the policy of education and I feel that we are getting the desired results in a much better manner, than if we resorted to the Courts.

In conclusion I wish to express my appreciation of the many kindnesses and courtesies shown me by the local and county health officers throughout the State. They have always shown a ready willingness to co-operate with me in this work and have saved the State many dollars in livery and auto hire, by kindly offering me the use of their autos, which has assisted me very materially in covering the State, especially the outlying districts, in which inspections could only be made at great expense. My relations with these gentlemen have been most pleasant.

Respectfully submitted,

F. J. O'DONNELL,

Special Inspector.

Detailed Report of Inspections made by F. J. O'Donnell, Special Inspector.

From Jan. 1, 1913 to Dec. 31, 1913.

Dairies	66
Hotels, Restaurants, etc.	402
Confectioneries and Bake Shops	47
Meat Markets and Slaughter Houses	156
Other Places	12
Totals	683

From Jan. 1, 1914 to October 31, 1914.

Dairies	65
Hotels and Restaurants	406
Confectioneries and Bake Shops	51
Meat Markets and Slaughter Houses	155
Construction Camps	2
Total	679

H. O. Cowles, Special Inspecter.

From May, 1914, to September 30. 1914.

Dairies	12
Hotels and Restaurants	178
Confectioneries and Bake Shops	14
Meat Markets and Slaughter Houses	74
Other Places	78
Construction Camps	111
Total	467

NUMBER OF INSPECTIONS REPORTED BY HEALTH OFFICERS TO THE STATE BOARD OF HEALTH FOR THE YEAR 1913, AND FOR 1914 UP TO AND INCLUDING OCTOBER 31, ARRANGED ACCORDING TO COUNTIES AND PRINCIPAL CITIES.

	Dairies		Hotels, Restaurants and Lunch Counters		Confectionery and Bake Shops		Meat Markets and Slaughter Houses		*Other Places of Business	
	1913	1914	1913	1914	1913	1914	1913	1914	1913	1914
Beaverhead	25	16	56	42	2	2	20	28	29	23
Broadwater	6	2	29	18	1	2	29	13	37	17
Carbon	96	14	189	105	54	34	119	74	216	74
Cascade Excl. of	128	64	14	7	7	4	66	24	53	25
Great Falls	19	27	287	234	86	62	84	28	....	....
Chouteau	24	17	129	148	13	9	25	28	44	74
Custer		18	173	92	23	11	51	27	6	2
Dawson	67	38	202	118	32	19	87	43	13	4
Deer Lodge Excl. of	244	190	....	....	....	....	43	40	....	....
Anaconda	132	54	167	124	57	43	78	49	257	181
Fergus	47	4	292	57	14	7	82	24	115	39
Flathead Excl. of	7	26	79	82	10	14	39	32	6	19
Kalispell	20	....	117	14	34	8	41	10	3	4
Gallatin Excl. of	165	129	140	203	....	13	137	124	62	55
Bozeman	66	10	120	90	69	33	39	41	171	122
Granite	10	10	12	9	1	1	10	14	1	2
Jefferson	....	....	35	10	4	3	6	2	....	....
Lewis and Clark Excl. of	....	25	....	9	....	....	....	11	....	....
Helena	7	....	110	15	14	1	53	6	56	10
Lincoln	....	2	53	32	9	21	21	11	....	....
Madison	279	159	150	37	1	....	94	64	110	90
Meagher	67	45	172	162	29	17	114	87	68	65
Missoula Excl. of	124	112	248	162	14	10	96	86	181	127
Missoula City	80	72	267	256	81	87	109	103	302	294
Musselshell	9	1	24	41	9	4	12	24	2	3
Park Excl. of	35	19	91	57	7	....	42	32	13	5
Livingston	296	214	174	144	46	37	47	34	207	196
Powell	24	10	45	14	24	9	33	9	76	25
Ravalli	55	8	58	28	7	....	59	32	7	5
Rosebud	33	4	107	12	1	1	17	4	....	2
Sanders	33	36	168	162	18	7	85	69	174	142
Silver Bow Excl. of	698	485	105	118	17	14	168	132	291	291
Butte	....	....	755	523	189	135	407	300	1081	712
Sweet Grass	99	17	31	21	6	4	22	6	18	....
Teton	14	6	212	76	51	13	40	24	118	54
Valley	39	23	240	153	30	17	72	53	40	28
Yellowstone, Excel. of	75	14	112	53	10	9	38	22	98	51
Billings	....	....	117	84	21	23	28	21	19	....
Big Horn	....	....	10	12	1	2	1	3	....	3
Blaine	11	12	113	141	3	13	56	34	197	64
Fallon	....	....	....	28	....	12	....	39	....	38
Hill	62	38	312	270	9	15	91	58	83	26
Mineral	....	....	....	5	....	2	....	....	....	....
Richland	....	....	....	....	....	....	....	....	....	....
Sheridan	7	10	130	173	12	24	48	74	96	183
Stillwater	43	11	62	42	1	1	33	15	38	16
Toole	....	1	....	37	....	2	....	6	....	41
Wibaux	....	....	....	3	....	....	....	2	....	5

*Other places of business include grocery stores, milk depots, soda fountains, ice cream parlors, and other places of similar character.

REPORT OF THE CHEMIST

By W. M. Cobleigh.

The laboratories for making the analyses of foods and drugs required by the State Board of Health in the enforcement of the Montana Food and Drug Act and the analyses of water and sewage required by the Board in the enforcement of the state sanitary laws and regulations are furnished and equipped by the State Agricultural College at Bozeman. The same laboratories also do the chemical work required by the State Dairy Commissioner.

The professor of chemistry in the Agricultural College is chemist to the Board of Health, and the professor of bacteriology is the bacteriologist of the laboratory staff. Therefore, Professor D. B. Swingle, serves as bacteriologist and has been assisted part of the time by Mr. Weatherhead, and later by Mr. Gottschalck. Mr. D. L. Weatherhead, who has held the position of Food Analyst for three years resigned November first to become assistant to the State Food Commissioner of Tennessee. Mr. Gottschalck continues in the service as Assistant Water Analyst. Mr. E. C. Hytree, of the Ohio State University, was added to the laboratory force September first, and will be employed in the analyses of foods and dairy products. Miss Nina Armstrong, is the clerk and stenographer of the department. The operating expenses of the Laboratory are paid from a special state appropriation.

There are two separate divisions of the laboratory work. The first division handles problems relating to water and sewage, and the second foods and drugs. More detailed reports of the work of these divisions for the biennial period follows There are, however, a few general policies governing the work of the chemist that will be discussed here.

In the water laboratory it is the policy to make analyses of private and public water supplies under regulations printed in the report of the water division. These analyses are made at the request of individuals and also when officials of the Board of Health determine by inspection that analyses are desirable and necessary in enforcing the sanitary regulations of the Board. If possible the samples are collected by some representatives of the laboratory or by an inspector sent out with specific instructions covering each case. In some instances local health officers make collections of water samples. Careful sanitary surveys are made each time samples are taken

and the results of these surveys have an important bearing on the interpretations of the laboratory data. In case there are any doubtful features in the study of a given water supply, repeated inspections and analyses are made until a safe opinion can be rendered.

The facts obtained by sanitary surveys and the laboratory data are the basis for recommendations for improving the sanitary conditions of water-sheds supplying public water supplies, and the surroundings of private and city wells. Such studies also give data on the pollution of rivers, which can be used in enforcing regulations preventing unnecessary pollutions.

When the sanitary survey and the laboratory data indicate that a water supply is dangerously contaminated, and the source of contamination cannot be altered or removed, then advise is given on methods of water purification by filtration or disinfection under policies which are discussed in the water report. Five disinfection plants have been installed under this plan.

Considerable time has been devoted to the study and development of policies that would be practicable to recommend to the State Board of Health in its consideration of stream pollution in Montana and the treatment and disposal of city sewage. The chemist of the Board has studied these problems in several eastern states and has visited many sewage disposal plants. As a further aid in this study a sewage experiment station has been organized, the outlined work of which is explained in the report. During the past two years sewage treating plants in the state have been visited, tests of efficiency made, and advice on improvements in operation given.

The proper control of water disinfection plants and filtration work depend in a large measure on laboratory tests made each day at the plant. It is difficult to find men trained for this work so the department of bacteriology and of chemistry of the Agricultural College have offered short courses for properly qualified persons employed by water companies in order to fit them for this work.

The work done in the food division of the laboratory organization is given below in the form of a general summary. The results of the analyses have been reported each month in the Board of Health Bulletin and therefore, are not published in this report.

Section 17, of the Montana Food Law, provides that: "No rules or regulations shall be promulgated by the State Board of Health under the provisions of this Act which do not conform to the rules and regulations promulgated or to be hereinafter promulgated by the National Government under the Food and Drugs Act of Congress of June 30, 1906; and no articles of foods or drugs shall be deemed to be adulterated, misbranded or otherwise subject to the provisions of this Act when such articles of food or drugs conforms to the rules and regulations of the United States Government under any national act or acts."

While the two laws are practically the same, still the state authorities have very definite and specific functions in the control and improvement of food supplies as indicated by the following statement from H. E. Barnard, State Food Commissioner of Indiana: "The passage of the Federal Food Law and of the Meat Inspection Act, provided means by which the quality and labeling of foods shipped in interstate trade might be regulated and it is to the credit of the federal departments that these laws have been so adequately enforced. At the present time the officials working in the several states need give little heed to the character of goods produced in other states, for it is only occasionally that anything crosses the state line without first having been subjected to the inspection of the federal authority. But the work of state authorities, while to this extent narrowed, is none the less necessary. Such important food problems as the milk supply, meats slaughtered by local butchers, bakery products, beverages and the thousand foods prepared and sold locally must be handled by state and municipal authorities. Certain of these problems are better regulated by cities than by authority centered at state capitols. Others so intimately concern the welfare of the whole state that their control should be a function of the state health officials."

Although the functions of the Federal and State authorities are distinct still the two organizations work in co-operation. The Secretary of the State Board of Health, is commissioned by the Secretary of Agriculture to collect for examination in the enforcement of the Food and Drug Act of June 30, 1906, samples of foods and drugs which have been shipped in interstate trade and the chemist of the Board is appointed collaborating chemist and makes the analyses of the samples collected by the commissioned state official.

It has been the policy of the laboratory division to co-operate with the Board of Health officials in fostering the educational side of the Board's work, which is considered today an important phase of the duties of such organizations. It is claimed by some that the ultimate success of many health measures depends on bringing the facts to the public in such a way as to secure effective co-operation between the people and these entrusted with the enforcement of food laws and sanitary regulations. Lectures on a variety of topics were delivered at local and state health officers meetings, to women's clubs, high schools, to students in the summer school of the Agricultural college, etc.

Summary of Samples Analyzed for the State Board of Health and State Dairy Commission.

Butter	168
Canned Goods	39
Candy	15
Coffee	26
Cream	105
Ice Cream	32
Ice Cream Fillers	2
Flavoring Extracts	15
Lard	5
Milk	972
Olemargarine	3
Preservative Compounds	5
Soft Drinks	199
Vinegar	3
Miscellaneous	21
Water	836
Total	2446

REPORT OF THE DIVISION OF WATER AND SEWAGE

By

W. M. Cobleigh, Chemist. D. B. Swingle, Bacteriologist.
Carl Gottschalck, Assistant.

The duties of the State Board of Health in protecting public water supplies are given in the following sections of the Revised Codes of Montana, 1907.

Section 1559. State Board of Health to Have Control of Public Water Supply—That the State Board of Health shall have the general oversight and care of all inland waters and of all streams, lakes and ponds used by any city, town or public institution or by any water or ice company in this state as sources of water supply for domestic use, and of all springs, streams and water courses tributary thereto. It shall be provided with maps, plans and documents suitable for such purposes, and shall keep records of all its transactions relative thereto.

Section 1560. Examination of Waters.—That said State Board of Health may cause examination of waters to be made to ascertain their purity and fitness for domestic use or their liability to impair the interests of the public or of persons lawfully using them to imperil the public health. It may make rules and regulations to prevent pollution and to secure the sanitary protection of all such waters as are used for domestic purposes.

Section 1565. Protection of Watersheds.—That no municipal or other public or private corporation and no company or persons shall hereafter construct, build, establish or operate any railroad, logging road, logging camp, electric plant or manufacturing plant of any kind upon or over any watershed of any public water supply system unless such corporation, company or person shall protect said water supply from pollution by such sanitary precautions as shall be approved by the State Board of Health, and any such corporation, company, or person intending to construct, build or establish or operate any railroad, logging road, logging camp, electric plant or manufacturing plant of any kind upon the watershed of any public water supply system, shall furnish the State Board of Health

with detailed plans and specifications of the sanitary precautions to be taken, which must be approved by said Board.

Under the authority conferred by these sections of the codes the following regulations covering the examination of private and public water supplies have been adopted:

I. A person wishing the analysis of a public or private water supply must fill out an application blank stating all the reasons for such a request and send the same to the Secretary of the State Board of Health, Helena. Blank forms for such requests are in the possession of all local and county health officers and can be secured from them or from the Board of Health, Helena.

II. Satisfactory reasons for requesting an analysis must be given in each case.

III. Water examinations will be made:

(a) If there is any reason to suspect that a water is the cause of sickness or ill health.

(b) If from an inspection of the source of a water supply there is reason to believe that it is contaminated.

(c) If a water has unusual or abnormal properties with regard to odor, taste, or color.

(d) If a city or town is seeking to improve its water supply by selecting a new source.

(e) If city or town authorities desire information on the necessity of installing water purification works.

(f) If the State Board of Health thinks the conditions warrant an analysis in any given case.

IV. Containers for water samples will in all cases be furnished by the laboratory. As a rule, samples for bacteriological examinations must be packed in ice. Samples must be taken in accordance with directions sent with the containers. No charge will be made for the examination, but the parties requesting the analysis will be expected to pay all express charges.

A total of eight hundred thirty-six samples of water were examined. Fifty-five per cent of this number were surface waters and forty-five per cent were ground waters from private and city wells. The samples were taken from four hundred twenty-five different sources of water supply. The following is a general summary of the results based on the reports made on the sanitary qualities of the various sources of water supply.

Surface Waters.

Good	54.7%
Doubtful	8.2%
Bad	37.1%

Ground Waters.

Good	62.1%
Doubtful	5.3%
Bad	32.6%

The water samples analyzed were shipped from the following towns: Alberton, Alhambra, Armstead, Argenta, Baker, Bannock, Belgrade, Benchland, Big Timber, Big Sandy, Billings, Blair, Boru, Bozeman, Broadview, Brocton, Browning, Burniham, Butte, Camas, Chelsea, Chester, Chinook, Choteau, Circle, Clancy, Clyde Park, Columbus, Columbia Falls, Conrad, Corvallis, Corwin Hot Springs, Cut Bank, Darby, Deer Lodge, Devon, Eureka, Ethridge, Flathead Lake, Forsyth, Fort Yellowstone, Frazer, Gardiner, Gildford, Glasgow, Glendive, Great Falls, Hamilton, Hardin, Harlem, Harlowton, Haro, Hot Spring, Havre, Helena, Helmville, Hinsdale, Hunters Hot Springs, Huntley, Inverness, Kalispell, Lamark, Lavina, Laurel, Tennep, Lewistown, Libby, Little Chicago, Livingston, Logan, Lombard, Madison Power Company, Malta, Medicine Lake, Miles City, Missoula, Moore, Naismith, Perma, Plains, Poplar, Rochester, Ronan, Roundup, Saco, Sand Springs, Savoy Sedan, Shelby, Sheridan, Snowdon, Stevensville, Tampico, Terry, Three Forks, Townsend, Trego, Trident, Twin Bridges, Virden, Virginia City, Wagner, Warm Springs, Warren, Whitehall, Whitefish, Wiota, Wolf Point, Worden, Yellowstone, Yantic, Zurich.

The Purity of Surface Waters in Montana.

The most important waterways in Montana, from the standpoint of their use as public water supplies for domestic purposes, are the Yellowstone, Missouri and Milk Rivers. A number of the important cities of the state take their water supplies from these rivers. These rivers drain large inhabited areas and consequently receive more or less contamination from the water-sheds. Unpurified city sewage flows to each river at points varying in their distances above the several city intakes. Consequently, the purity of the city water supplies taken from these rivers has often been questioned by the public.

The information collected by sanitary inspections of these rivers and the laboratory data secured and studied in the light of certain general principles of sanitary science, point to some general conclusions. It is highly important that the public concerned should become familiar with these conclusions.

The first point to establish is that it is not to be expected that these water ways are now in "their original and natural condition of purity." The committee on standards of purity for rivers and water ways of the National Association for Preventing the Pollution of Rivers and Waterways, makes the following statement in its report: "This committee finds that on account of the increasing population of the country, it is, and always will be physically impossible to maintain waterways, in their original and natural condition of purity. A reasonable degree of cleanliness should nevertheless be demanded."

This committee further states that "Streams from which water supplies are taken without purification should not receive any fecal matter, sewage, sewage effluent, or wastes that will render the water a menace to health, or otherwise impair its natural quality." Applying these statements to the Yellowstone, Missouri and Milk rivers one may readily see that these waters are not now in their natural state of purity. Considering the contamination received from the water sheds and from city sewage the question arises, is it reasonable to suppose that these waters are contaminated to the extent that they are a menace to health? In answering this question it should be understood that there is no universal standard of water purity that can be applied to all cases. Each problem like this is more or less a local one and the matter of a standard of purity must be established for each case with the data available. However, there are certain general principles of sanitary science that should be taken into account when passing judgment on the purity of any water. The most important of these principles are clearly stated by Hill and Whitcomb as follows:

"Nearly everyone in the medical world today is more or less familiar with the theorem formulated by Hazen and the so-called Mills-Reincke Phenomenon. Mr. Hiram F. Mills, member of the Massachusetts State Board of Health, and Chief Engineer of the Locks and Canals on Merrimacke river, observed, that shortly after the introduction of a filtered and purified water

supply in Lawrence, there was a marked decrease, not merely in the death from typhoid fever, but also from other diseases. At the same time Dr. J. J. Reincke, Health Officer of Hamburg, Germany, observed a similar effect on the death rate of his city following the installation of a purer water supply. From these observations, together with observations made by him in the the cities of Troy and Albany, Mr. Allen W. Hazen, evolved a theorem which he states as follows: "When one death from typhoid fever has been avoided from the use of better water, a certain number of deaths, probably two or three from other causes have been avoided."

Professor W. T. Sedgewick and Mr. J. S. MacNutt have made further studies of the Mills-Reincke Phenomenon and in addition to the cities above cited, examined the death rates of Lowell and Binghampton and found that following the introduction of a purer water supply in these cities, there was a decrease in the number of deaths due, not only to typhoid fever, but to other causes. They found that the decrease in death rate was particularly noticeable in such diseases as diarhoea, cholera infantum, other gastro-intestinal diseases, pneumonia, pulmonary tuberculosis and bronchitis. Furthermore, they found an apparent improvement in the general health of the community, not traceable to the reduction in these diseases.

Of the diseases just mentioned, it will probably be admitted that the causative factors in the production of diarrhoea, cholera infantum, pneumonia and pulmonary tuberculosis may be bacterial. We will venture to state that most gastro-intestinal diseases have their origin through the agency of bacteria. It will also be admitted by most that typhoid, cholera, diarrhoea, cholera infantum, dysentery and other acute gastro-intestinal diseases may be water borne. There are some who claim that pulmonary tuberculosis may be conveyed through the medium of water. So far as this paper is concerned, however, the most interesting fact here presented is that all of the acute gastro-intestinal diseases have at one time or another been attributed to water. If this be so why not chronic intestinal tract infections be water borne?"

The above considerations should be applied to the problem of determining the possible menace to health of the city waters taken from the Yellowstone, Missouri and Milk rivers. It

should be noted in particular although the popular belief is to the contrary that typhoid fever is not the only water borne disease, and that in the problem of determining the purity of a given water, this disease (according to Hazen's principle) accounts for no more than one-third. A number of analyses of samples of water taken from the Yellowstone River, the Missouri River and the Milk River, have been made. These analyses are tabulated in this report and the following conclusions have been drawn from the laboratory data, and the information gained from inspections interpreted in the light of the principles of sanitary science.

Conclusions.

1. It is not posible to express exactly how great is the menace to health in the city water supplies taken from the Yellowstone, Missouri and Milk Rivers. The reason for this statement is the lack of a universal standard of water purity; the diseases that may be legitimately regarded as water borne are not known with sufficient certainty. The health statistics of the cities supplied with these waters have not been studied with the idea of determining the possible effects of the water supplies on health.

2. That some suspicion should rest on the purity of these water supplies is apparent when it is recalled that at times these rivers receive contamination from the water sheds and some city sewage and sewage effluent at all times. Further, both the bacteriological tests and the chemical analyses indicate that the waters at the several intakes are contaminated at times. It should further be noted that it is more difficult to obtain evidences of contamination in the water samples drawn from city taps, because of the purification that may take place in intake wells, settling basins and in the pipes, before delivery to the consumer.

3. On the assumption that a water supply to be recommended for public consumption, should be as safe as is possible under our present knowledge, it seems very reasonable to state that all water supplies taken from rivers receiving more or less contamination from the water sheds and also city sewage, should be purified by some one of the well known methods The purifying process should be installed as soon as there is any well founded suspicion that the contamination has reached a degree that is a menace to health.

In this connection it should be stated that temporary hypochlorite disinfection plants are in operation at the Great Falls City Water Works, at the Boston and Montana Water Plant supplying Little Chicago, the Montana Water Company at Billings, and the Chinook Water Plant. At Livingston an emergency plant has been installed, which will be put in operation whenever analyses of the water indicate that it is necessary or desirable.

These temporary plants will no doubt be displaced in due time by permanent filtration systems. Billings, Columbus and Chinook have already made definite plans in this direction. Great Falls has done much preliminary work in efforts to secure a better water supply.

A brief description of the sources of surface water supplies examined is given, in each case followed by a tabulation of the results of analyses.

Yellowstone River and Gardiner City Water.

The pumping plant of the Gardiner water works is located on the bank of the Yellowstone River a few hundred feet below the mouth of the Gardiner River. Originally the intake pipe was laid direct to the Yellowstone River just below the pumping station. With the intake in this position the water pumped to the water tank for town use contained a large portion of water from the Gardiner River, because as stated above, the mouth of the Gardiner River is only a few hundred feet above the intake.

In the summer of 1912, there were a number of typhoid fever cases in Gardiner. An investigation was made by a Board of Health official, (Monthly Bulletin, July, 1913), and it was found that there had been several recent cases of typhoid at a point a short distance above the town of Gardiner on the Gardiner River. It seemed quite likely that the infection in Gardiner was water borne and that the town water supply had been the means of spreading the disease.

The remedy was plain and comparatively easy to carry out. In order to eliminate entirely the possible effects of the Gardiner River water it was necesary only to extend the intake pipe up the Yellowstone River to a point above the mouth of the Gardiner River. This was done and the laboratory division was requested to examine the new intake and make sure that it was so constructed that all Gardiner River water was

excluded from the system and that only water from the Yellowstone was being pumped. An examination was made and a complete series of samples was taken for bacteriological and chemical tests. In addition to the usual laboratory tests advantage was taken of the fact that the Gardiner River is much higher in mineral matter in solution than the Yellowstone, as shown by the following figures:

	Gardiner River	Yellowstone River above Gardiner River
	Parts per Million.	
Total solids	229	59.
Chlorides as Cl	19.3	6.4
Carbonates as Co3.....	78.3	27.1
Sulphates as So4.....	56.3	10.5

By taking samples of the Yellowstone River at the new intake and from the pumps it was possible to obtain data which proved that apparently the intake pipe was properly laid across the Gardiner River because the analyses of samples at the pumps and city taps agreed closely in all respects with water from the Yellowstone.

Yellowstone River and Livingston City Water.

According to the design for the Livingston City Water Plant it is the intention to admit water from the Yellowstone through the specially prepared banks of the river to an infiltration well to effect a purification of the river water. There is some evidence recently obtained that tends to show that some ground water gets into the infiltration well.

The Yellowstone River receives untreated sewage at several points above the Livingston City intake, and also receives contamination from the water shed at times. Sewages enter the river at one or two points on the Gardiner River, at Gardiner, and at Corwin Springs. It was apparent that the river at the intake was contaminated at times, consequently, the water company was advised to install an emergency hypochlorite disinfecting plant. This was done promptly. The plant has not been used as far as the writer knows because frequent tests of tap samples showed as a rule that the water in the mains was of a better sanitary quality than the river water.

Yellowstone River and Columbus City Water.

The water supply of Columbus, for a portion of each year has been taken from the Yellowstone River. The pumping plant located near the river draws water direct from the river, without the use of an infiltration well. In addition to the contamination that enters the river above Livingston, untreated sewage enters at Livingston and at Hunter's Hot Springs. All factors considered it is apparent that the Yellowstone River water could not be recommended for public consumption at that point, consequently the city authorities have taken steps to construct a filtering plant.

Yellowstone River and Laurel City Water.

There are two water systems in Laurel, both of which take water from the Yellowstone River. One furnishes water to the people living in the original townsite, and the other supplies water to the residents of a newer addition built by the Northern Pacific Railroad Company.

The nearest sewer outlet above Laurel is eighty-one miles distant by rail. This outlet is located near Springdale where sewage from Hunter's Hot Springs enters the Yellowstone. The water-shed received contamination from farm and town habitations at many points. The railroad runs near the river and consequently the human excreta dropped from passenger trains is a factor to be considered.

The intake of the Northern Pacific water plant is so arranged that water can be pumped at will from either an infiltration well near the river or from the river direct. The intake well is situated in ground containing considerable "alkali," consequently, the pumped water as a rule contains more mineral matter in solution than the river water because some ground water probably enters the well. The intake pipe has been extended well out into the river because the water near the river banks is polluted by seepage water from a slough that drains to the river about one-half mile above the intake. The pumping plant is located about 600 ft. from the infiltration well and delivers water to two tanks in the railroad yards about one mile distant. As far as can be determined by analyses the joints in the intake pipe line between the present infiltration well and the pumping plant have been properly calked since the outbreak of typhoid fever in 1909, which was caused no doubt by sewage entering the uncalked joints of the pipe line. The fact that

the joints were not calked properly was discovered by comparing analyses of the river water and water in the tanks.

The analyses are tabulated below:

	River at Intake.	Water Tanks.
Solids	164.	740.
Free Ammonia	.03	.13
Albuminoid Ammonia	.17	.09
Nitrogen as Nitrites	Trace	.0091
Nitrogen as Nitrates	Trace	.22
Chlorine	6.1	14.8
Sulphates as So^4	25.0	350.4

A comparison of the above analyses shows plainly that the pumping plant was not delivering river water as was intended. The analyses caused a careful examination to be made which showed that due to uncalked points in the intake pipe line, ground water was entering the joints. The pipe line was laid in soil high in "alkali" and this accounts for the high mineral content of the water in the tanks. As originally constructed untreated sewage flowed directly over the pipe line and an experiment demonstrated that the sewage could easily be sucked into the pipe. This is no doubt the explanation of the typhoid epidemic referred to above. As soon as the condition of the pipe line was discovered it was put in proper shape by calking the joints, and the sewage was diverted into another channel. Frequent analyses were made to determine whether the joints were tight. Since these repairs were completed there has been no typhoid. However, the conditions are such that this water supply should receive some supervision and no doubt some method of purification should be installed in due time in order to insure the delivery of a perfectly safe water.

The pumping plant of the city of Laurel is located on the banks of the river about one-half mile above the Northern Pacific plant. The intake pipe is laid out in the river far enough to escape the effects of polluted seepage water which flows to the river from a slough just above the pumping plant. Eventually some method of purifying the water at this plant should be considered.

Yellowstone River and Billings City Water.

The Montana Water Company of Billings pumps water from the Yellowstone River for city use. The water from

the river flows through a canal about one mile in length to a settling basin of about eight million gallons capacity. The water from this basin is pumped by rotary pumps to the distributing system.

In May, 1913, a hypochlorite disinfecting plant was installed and efficiency tests which were reported in the Board of Health Bulletin, March, 1914, were made by Mr. H. E. Morris. The disinfecting plant is still in operation and the company has equipped a good laboratory and employs a man to make frequent tests of the treated and untreated water. The city of Billings has voted a bond issue to raise funds to buy the water plant and to install a modern filtration plant.

This represents the principal work done by the laboratory in studying water supplies along the Yellowstone. Much work remains to be done at points below Billings and it is hoped that funds will be available for this purpose during the next year.

Huntley Project Ditch.

The Huntley Project Ditch is taken out of the Yellowstone River about ten or twelve miles below Billings. The ditch supplies the Huntley Project with irrigating water. However, on account of the high mineral or alkali content of some of the ground water on the project some people use the ditch water for domestic purposes. It is evident from the analyses of water samples taken from the main ditch and some of its laterals that the water cannot be recommended for drinking. The Yellowstone River is contaminated with the Billings city sewage at a point about twelve miles above the head of the main ditch. It is hardly to be expected therefore, that the water in the ditch or its laterals would be at all times a safe drinking water. In this connection it is only fair to note in the tabulation below that the Yellowstone River at a point above the Billings sewage outlet is contaminated and therefore, the river water at this point could not be recommended for public consumption.

If in places circumstances are such that the ditch water must be used for drinking it would by all means be advisable to purify it for drinking by distillation, using any of the market forms of automatic household stills designed to operate on the kitchen range. The ditch water could also be stored in cisterns for household use in which case it would be advisable

to sterilize the water with bleaching powder. The laboratory will gladly furnish on application specific information covering the details of the procedure for any given case.

East Gallatin River and the Northern Pacific Water Plant at Logan.

The East Gallatin River is contaminated by Bozeman sewage and by drainage from the Gallatin Valley which is thickly populated. Much waste irrigation water enters the river at many places and naturally, such waters are polluted. Water is pumped for engine use from the East Gallatin River by the Northern Pacific Railroad Company, at Logan. This water cannot be recommended for drinking and consequently its use for that purpose was discontinued and well water used instead on recommendation of the Secretary of the Board of Health.

Missouri River and Trident Water Supply.

The Trident Water plant located on the bank of the Missouri River below Logan, consists of an infiltration well, pumping plant and a storage tank. The river water at the intake shows evidence of contamination at times. The indications are that some ground water enters the infiltration well. It is the intention to examine this water supply frequently in the future, and determine whether it will be necessary to recommend some form of purification.

Missouri River and Great Falls City Water.

The principal water plant at Great Falls pumps water directly from the Missouri River. The intake pipe delivers water by gravity to a well, where the water is treated with calcium hypochlorite before it is pumped to the distributing system. The hypochlorite plant was put in operation by the city engineer in April, 1913.

The city has considered the method of improving the water supply by the installation of a permanent filtration system to treat water at the present plant, and has also considered the possibility of taking water from Giant Springs and from other sources. In this connection, the laboratory has made a number of examinations of different water supplies.

Missouri River and Little Chicago Water Supply.

Water is supplied to the people of Little Chicago from the Missouri River by a pumping plant operated by the Boston and Montana Reduction Works. The water is distributed to the

residences in the town from storage tanks located on the hill above the smelter.

During the month of March, 1913, a number of cases of typhoid fever in Little Chicago were reported to the State Board of Health. After an effort to locate the source of infection by consulting local health offiers, it was decided to make a sanitary study of the water supply. Without stating details of the survey, it was decided from observations made and from the analyses tabulated below that the water supply was contaminated. The contamination at the intake of the pumping plant could come from more than one source.

The officials of the Reduction Works were advised to install a hypochlorite purifying plant to be operated until a method of supplying water less subject to contamination could be adopted. The suggestion was cordially received and within a day or so a plant adapted from plans devised by the Minnesota State Board of Health, was installed. Later, improvements were made in the plant which make it very convenient indeed for the local conditions. Nine pounds of chloride of lime were used per million gallons of water and bacteriological tests indicated that germs of the intestinal type were entirely destroyed. Later a chemical analysis showed an increase in organic matter in the water, and it was thought advisable to increase the chloride of lime, for a time at least, to twelve pounds per million gallons.

The officials of the Reduction Works are apparently much pleased with this plan of purifying the water supply of Little Chicago, and are operating the plant in an efficient manner.

No typhoid cases in which the water was assigned as the cause, have been reported since the purifying plant was installed. A few sporadic cases have been reported during the past summer, which were undoubtedly due to fly infection.

Milk River and Chinook City Water.

The water supply of Chinook is pumped direct from Milk River. The river above Chinook is contaminated with Havre city sewage and is subject to further contamination from the water-shed. Examinations of the water have been made from time to time and it was apparent from both the laboratory data and from the sanitary surveys that the water could not be recommended for public consumption without purification. There were some grounds for believing that the typhoid fever in the

city was caused by infection that was water borne. The city therefore, installed a temporary hypochlorite plant in May, 1914. In September of this year the city held an election and voted to issue bonds to raise funds for the construction of a permanent filtration system.

Alhambra and Clancy.

It came to the attention of the Secreary of the Board of Health that the water served for drinking at the Great Northern lunch counter at Clancy was probably contaminated. A series of water and sewage samples was taken along Prickly Pear Creek and from taps at Clancy. The water is pumped at Clancy from an intake well which apparently is contaminated from Prickly Pear Creek, which in turn receives septic tank effluent at Alhambra and Sunnyside. As far as can be determined from the sanitary survey and the laboratory data the Great Northern water supply at Clancy cannot be recommended for public consumption.

Deer Lodge Water Supply.

From time to time water samples taken from taps supplying city water in Deer Lodge have been analyzed. The results of these analyses and the data concerning the sanitary conditions on the water-shed, collected by Dr. G. J. Marquette, the local Health Officer, made it desirable for State Board of Health representatives to inspect the source of the Deer Lodge water supply.

This inspection was made May 30, 1914. The water supply is taken from Cottonwood Creek. The intake is three or four miles above the city. At present the water from the creek is taken directly into a pipe line which leads to two reservoirs lined with concrete. It is reported that these reservoirs are cleaned at proper intervals. It is planned in the near future to admit water to the system from a filtration well which has been constructed near the banks of the creek. This will have the effect of delivering a clearer water, when the creek is turbid, than can be obtained by the present method with a direct intake supplied with metal screens. The water from the reservoir is delivered to the city mains by gravity.

From the sanitary aspect the ideal water-shed which supplies water for domestic use is one on which there are no public highways, no human habitations and no pasturing of farm animals. The water borne diseases are caused by germs which

have their origin in the intestinal tract of human beings and animals. The fewer the chances are of admitting animal excreta to a city water supply the safer the water.

There are at least six farm habitations on the water-shed of Cottonwood Creek above the Deer Lodge intake. A public road on the water-shed from Deer Lodge to Emery, a distance of nine miles, is used by the farmers along the creek and by a few miners at Emery and vicinity.

As a rule the farm houses are near Cottonwood Creek or some of its branches. The miners at Emery live near a branch of the creek. Therefore, conditions on the Deer Lodge water-shed are such as to require careful sanitary inspection and supervision. It was found that due attention had been given to sanitary conditions above the intake by Dr. G. J. Marquette, the local health officer. Under his orders all privies near the creek, particularly those placed over branches of the creek have been moved to safe distances. The few miners at Emery have been cautioned not to contaminate the branch of Cottonwood Creek running through the camp. The privies at Emery are located some distance from the creek.

From the laboratory data and from the fact the water-shed has had the attention of the local health officer, the opinion is held that Deer Lodge city water was reasonably safe at the time this investigation was conducted. However, sanitary inspections should be made in the future to detect any change in conditions and to keep the people living on the water-shed in full sympathy with the efforts of the health authorities to protect the water supply from contamination. It would be desirable to post notices to picnic parties and other visitors warning them of the dangers of contaminating a water-shed supplying water for domestic use.

Pipestone Creek and the Northern Pacific Railroad Water Supply at Whitehall.

A laboratory examination of the Northern Pacific Railroad water supply at Whitehall, was made on March 26, 1914, and direct evidences that the water was contaminated were found. A field survey of the source of this water supply was made by Dr. L. R. Packard, the local Health Officer, and conditions were found which were unsatisfactory from the sanitary aspect. It was therefore, decided that the water could not be recommended for public consumption. On receiving this in-

formation the Railroad Company discontinued the use of the Whitehall water for drinking on passenger trains on the Ruby Valley Branch.

On May 31, 1914, Dr. Cogswell, Secretary of the State Board of Health, Dr. L. R. Packard, local Health Officer, and the writer made a field survey of Pipestone Creek, the results of which are given below. The survey did not extend above Pipestone Springs.

Water sample No. 3156, taken from Pipestone Creek above the springs shows very direct evidences of contamination. The source of this contamination will be located on some future survey.

At Pipestone Springs several sources of contamination were found. A few water closets which empty into branches of the main creek are in use. One privy was located directly over the creek. A hog pen and a chicken yard, both on branches of the creek add considerable contamination. The overflow from the plunge bath goes to the creek. This is not a serious factor at this time because of the burning some months ago of both the hotel and plunge bath house. In case the hotel is rebuilt, the State Board of Health will outline the plans for a sewage disposal system and a method for taking care of the overflow from the plunge baths.

There are several farm habitations on the main creek and also on Little Pipestone Creek, which is above the Northern Pacific Railroad intake. For some distance above the Northern Pacific intake the railroad track runs parallel with the creek and only a few feet away from it. Human excreta dropped from passenger trains is therefore, another source of contamination, that cannot be overlooked in this survey.

The Northern Pacific intake is about three to four miles above Whitehall. An infiltration well on the banks of the creek is used but some water flows direct from the creek to the well, consequently, there is little purification by filtration. Water sample No. 3158, secured at the intake shows evidences of contamination when examined at the laboratory.

The water in the intake well flows by gravity to a water-tank in the Whitehall yards. Some purification takes place in the tank due to sedimentation. However, this purification should not be relied on to make the water perfectly safe, as

shown by laboratory reports No. 2891 and No. 3159, which indicate that the water is contaminated.

It is therefore, concluded that the field survey of the source of the water in the Northern Pacific Railroad plant at Whitehall shows conditions which are not satisfactory from the sanitary aspect. In the laboratory examination of samples of water from Pipestone Creek and from taps in the roundhouse direct evidences of the presence of contamination were found. This water, therefore, cannot be recommended for public consumption without purification.

It would be difficult to disinfect the water with hypochlorite in a gravity system of this kind. The water could be purified by distillation in sufficient quantities for the use of railway employees in the roundhouse and yards. It would also be possible to install a small mechanical filter for this purpose.

Boulder River and Big Timber City Water.

Big Timber is supplied with water by a gravity system taking water from the Boulder River. The intake reservoir is located a few feet from the river, about six miles from the city. The valley which the Boulder River drains is narrow and consequently the farm habitations which extend about twenty-five or more miles above the intake of the water-works are as a rule near the river banks. This fact makes it necessary to advise that special precautions be taken to warn the people in the valley against the dangers of contaminating the water-shed. All privies should be located some distance from the river banks and manure piles should not be placed near the river. Precautions should be taken as far as possible to prevent drainage from barnyards entering the river.

There is no city sewage entering the Boulder River and there is no railroad in the valley to contaminate the water-shed. Therefore, with proper precautions exercised by the inhabitants of the valley it will doubtless be possible for some time to come to keep the river water pure enough to be reasonably safe. In case any doubt is raised on this point in the future, it would no doubt be possible to change the intake reservoir so as to provide a degree of purification by an infiltration system and also to increase the factor of safety by storage of the water before delivery to the distributing system.

The Purity of Ground Waters in Montana.

A number of the smaller cities and towns of the state draw upon the supply of ground water for domestic use. In some instances a single well is drilled or dug while in other cases a series of wells are drilled. In general the locations of these wells have been carefully made with respect to possible sources of contamination, consequently, the water supplies are satisfactory from the sanitary aspect. The depth of the wells varies with conditions in the various localities. As a rule, properly equipped pumping stations have been constructed to deliver the water to reservoirs or steel tanks.

On the average ground waters contain more mineral matter in solution than surface waters. The occurence of an excessive amount of soluble salts in the soil is the natural result of rock weathering in an acid region. In consequence the ground water in such a region will contain mineral salts in solution which are popularly called "alkali.'

These alkali salts are for the most part the same ones that occur in natural mineral waters known to have medicinal qualities. The salts most common in Montana well waters are Glauber's salts, or sodium sulphate, Epsom salts, or magnesium sulphate, baking soda, or sodium bicarbonate, common salt, or sodium chloride, the sulphates of calcium and the bicarbonates of calcium and magnesium.

Alkali salts give well water properties that make people suspicious of its value for domestic use, and their suspicions in some instance are well founded. Some highly charged waters have not only a bad taste, but also a decided medicinal effect. Others when fresh seem satisfactory for drinking, but impart a bitter taste to tea and coffee, and also turn them black. A similar effect is observed in cooking vegetables. A water high in lime and magnesium salts gives trouble in the laundry.

The medicinal effect of a water containing alkali cannot be determined from a chemical analysis alone. Clinical data obtained by a physician and the experiences of people using a given water are essential factors in the interpretation of a chemical analysis of a mineral water.

Considerable work has been done in the laboratory in studying the effects on the system of the alkali waters found in the state but definite conclusions on the limits of the various salts allowable in drinking waters are not ready for publication

at this writing. When it is certain that a water contains an excessive amount of alkali it is recommended that the same be purified by distillation using some form of household still.

A large number of farm water supplies have been examined. A large proportion of these waters are contaminated, showing that more precautions should be taken to protect the farm well from contamination. It is recommended that during the next biennial period that special attention be given to the farm water supplies of the state.

In regions where the ground waters are high in alkali some farmers store surface waters from convenient sources in cisterns for domestic use. In many instances these surface waters are contaminated and should not be used without purification. It is recommended in such cases that a sample of water from the cistern be sent to the laboratory and the dimensions of the cistern. The proper amount of bleaching powder of known strength will then be forwarded to the owner to be used in disinfecting the water in the cistern.

Lewistown City Water.

The city water of Lewistown is now supplied from springs located about six miles above the city near Spring Creek. There are no habitations near the springs and a survey made last July showed conditions around the springs satisfactory from the sanitary aspect. No evidences of the presence of contamination were found in the laboratory examination of the spring water. Chemical analyses of these two springs have been made and are reported below:

Samples.	No. 2864	No. 2865
Samples from:	Middle Spring.	Upper Spring.
Date of Sampling:	March 3, '14	March 2, '14
Turbidity	None	None
Sediment	None	None
Color	None	None
Odor	None	None

Chemical Examination.

Total solids	402.0	402.0
Free Ammonia	0.012	0.013
Albuminoid ammonia	0.012	0.013
Nitrogen as nitrites	0.001	0.001
Nitrogen as nitrates	0.02	0.02
Oxygen consumed	0.95	1.05
Chlorine	1.53	2.54
Carbonates	102.3	102.3
Sulphates	162.3	162.3
Calcium	83.4	82.98
Magnesium	26.6	26.1
Silcious matter	14.3	13.0

The radicals are probably combined as follows:

	Middle Spring.		Upper Spring.	
	Pts. per Million.	Grs. per U. S. Gal.	Pts. per Million.	Grs. per U. S. Gal.
Calcium carbonate ($CaCO^3$)	170.4	9.93	170.4	9.93
Calcium sulphate (CaSO)	52.0	3.03	50.6	2.94
Magnesium sulph. ($MgSO^4$)	133.0	7.75	130.5	7.61
Sodium sulphate (Na^2SO^4)	28.4	1.65	32.8	1.90
Sodium chloride (NaCl)	2.5	0.14	4.2	0.24
Silicious matter	14.5	0.83	13.0	0.75
Total	400.9	23.33	401.5	23.37

Darby.

The town of Darby is supplied with water from private wells. There is no sewage disposal system and the ordinary privy is used throughout the town. An effort is being made to incorporate the town and obtain funds for a municipal water plant securing the water from Tin Cup Creek which according to a laboratory test is apparently free from contamination. This move for a water plant in Darby is to be commended because some the wells in the town show evidences of con-

tamination. The water-table during the irrigation season is very near the surface of the ground and the subsoil is largely gravel. Shallow wells under such conditions are subject to contamination and their use cannot be recommended when it is possible to secure water from a source that is satisfactory from the sanitary aspect.

Harlowton.

The water supply of Harlowton is drawn from a well somewhat over six hundred feet in depth, and pumped to a reservoir which supplies the distributing system. The well is cased with an iron pipe and located on high ground above the city and is apparently not subject to contamination.

On one or two occasions samples from city taps and the reservoir showed some indications of contamination while samples direct from the well were above suspicion. The reservoir was then cleaned and further sampling showed that the conditions which indicated contamination disappeared.

Deep wells in Montana frequently contain large amounts of mineral matter in solution. It is interesting to note that while the Harlowton water contains much more mineral matter than the surface waters of the state it is still considered a satisfactory water for domestic purposes. The lime and magnesium content is low, therefore, the water is soft.

According to the hypothetical combination reported below the principal salt in solution is sodium bi-carbonate, or baking soda, while sodium sulphate or Glauber's salts constitutes most of the remaining mineral matter.

The analysis of this water is given below trusting that it will be of value for comparison with analysis of other water supplies drawn from deep wells:

Analysis.

	Pts. per Million.
Free Ammonia, (NH^4)	.59
Albuminoid Ammonia, (NH^4)	.04
Nitrites, (NO^2)	0.0
Nitrates, (NO^3)	0.0
Sodium, (Na)	407.0
Magnesium (Mg)	.9
Calcium, (Ca)	2.95
Iron Oxide, (Fe^2o^3)	1.6
Aluminum Oxide, ($A1^2o^3$)	1.6
Silica, (SiO^2)	6.8
Chlorine as O1	9.5
Sulphates as SO^4	226.3
Carbonates as CO^3	6.3
Bi-carbonates as HCO^3	740.0
Solids	1067.0

The above constituents are probably combined as follows:

	Pts. per Million.	Grs. per U. S. Gal
Sodium chloride	15.7	.92
Sodium sulphate	334.9	19.54
Sodium carbonate	697.07	39.6
Ammonium carbonate	1.6	.09
Magnesium carbonate	3.1	.18
Calcium carbonate	5.2	.30
Iron and aluminum oxides	1.6	.09
Silica	6.8	.40
Total	1065.97	61.12

Another sample of this water was analyzed on August 10, 1914, and the analysis gives results practically the same as reported above. This indicates that the water has not altered in composition materially in five years.

Moore.

The water supply for the city of Moore is drawn from a well by an electric pumping plant. The system is owned by the city. The well is dug eight feet by thirteen feet and twenty-five feet deep.. It is cased with concrete. To increase the flow of water there is at the bottom of the well a

forty foot tunnel four feet high and is six feet wide which is timbered. The well furnishes eighty-five gallons of water per minute.

The well is located above the town and the direction of the flow of the underground water is from the well towards the town. The surroundings of the well are satisfactory from the sanitary aspect, and in the laboratory examination of a sample of water from the well no evidences of contamination were found. The water can be recommended for public consumption.

There are still in use a number of private wells. There is no city sewage disposal system and ordinary privies and cesspoools are in use. This method of sewage disposal naturally throws some suspicion on the purity of private wells. From the sanitary aspect it would be advisable to abandon the private wells about the city and use water entirely furnished by the municipal plant. In the interests of better sanitation in the city, privies should be prohibited. The general use of cesspools under the circumstances cannot be recommended. The best method existing under the local conditions would be to dispose of the sewage by treatment in air-tight septic tanks with distribution and oxidation of the effluent in the soil by means of tile drains.

Whitehall.

The people of Whitehall use water from private wells entirely. Many of the wells are between 50 and 70 feet in depth, cased with iron pipe and as far as has been determined are free from contamination.

The shallow wells are open to some suspicion as shown by the laboratory data because the ordinary privy and cesspool are in use. Through the activity of the local health officers some are using the air tight septic tank with tile distribution of the effluent. This is the safe system for conditions as they are in Whitehall and it is to be hoped that this system can be extended until it is adopted generally.

Havre City Water.

The water supply for the city of Havre is pumped from a series of driven wells to a reservoir. When the site for the wells was selected the writer was told that there were no residences above the wells in the direction from which the ground water apparently flows. The writer was informed that the

residences recently built are not connected to the city sewer but the disposal of household waste and sewage is by cesspools. The chances are very good that these cesspools are too far away to be a menace to the city water supply. In any event it would be advisable to have these residences connected to the sewer in due time and also to make analyses of the water from time to time.

Ground waters in Northern Montana are very often charged with mineral salts in solution. Popularly, these salts are termed "alkali." It is important to note that the Havre city water has a low mineral content compared with the general run of ground waters in that region.

Naturally, surface waters in the mountainous portions of the state have a comparatively low mineral content and are therefore, better sources for city use. The analyses of the Havre city water is tabulated below with the hope that this information may be of value to other cities and towns in Northern Montana where ground water must be the source of supply. An engineer who has studied the geology of the location of Havre wells might secure information that would be of service in locating sources of satisfactory ground waters in other towns.

Analysis—Appearance.

Turbidity	None
Sediment	None
Color	None
Odor	None

Chemical Examination.

	Pts. per Million.
Total solids	670.00
Free Ammonia	0.05
Albuminoid Ammonia	0.103
Nitrogen as nitrites	0.000
Nitrogen as nitrates	0.40
Oxygen consumed	0.75
Chlorine	7.92
Carbonates, (CO^3)	228.80
Sulphates, (SO^4)	173.50
Calcium, (Ca)	56.00
Magnesium, (Mg)	29.00

The above radicals are probably combined as follows:

	Pts. per Million.	Grs. per U. S. Gal.
Calcium carbonate, ($CaCO^3$)	140.00	9.16
Magnesium carbonate, ($MgCO^3$)	101.50	5.92
Sodium carbonate, ($NaCO^3$)	127.70	7.45
Sodium Chloride, (NaCl)	13.00	0.76
Sodium sulphate, Na^2SO^4	256.80	14.97
	639.00	37.26

Disinfection of Public Water Supplies in Montana.

Many of the cities of Montana are supplied with water taken from Montana streams at points above human habitations. Generally these water supplies, are from the sanitary aspect above suspicion. The average of the chemical analyses of thirteen of these water supplies is tabulated below. These samples were collected during the fall and winter months when the organic content was low.

	Pts. per Million.
Solids	991.
Free Ammonia	.0152
Albuminoid Ammonia	.0280
Nitrogen as Nitrites	.0000
Nitrogen as Nitrates	.102
Chlorine	.000

However, these pure mountain streams soon become contaminated as they flow through the inhabited valleys, which they drain. In many instances the contamination comes from city sewage and drainage from contaminated watersheds.

Cities that take water supplies from these contaminated streams should install some satisfactory method of purification before the contamination reaches the point where it is a menace to health. From the fact that the surface waters in question are more or less turbid during a part of each year it appears that some form of sand filtration would be the most satisfactory method of purification. Cities using this method could have a clear sparkling water and one that would be safe for drinking.

It becomes apparent that some of the public water supplies in the state should receive some form of purification at an

early date. The installation of a sand filtration plant requires considerable time even after a city has voted to adopt this plan of water purification. Consequently, on the advice of the State Board of Health, a few hypochlorite disinfection plants have been installed to treat raw unfiltered water. It should be understood that hypochlorite does not remove turbidty and therefore, will not improve the physical appearance of a water as does filtration. Therefore, it is evident that hypochlorite treatment cannot be recommended as a permanent method of treating turbid water.

There has arisen in the minds of a few people in the state some doubt as to the advisability of using the hypochlorite disinfection of public water supplies. The objections are offered from several points of view. Answers to the objections are clearly expressed in a recent article by Professor E. B. Phelps, of the United States Public Health Service, and therefore, a part of the article is quoted below:

"The chemical disinfection of water supplies has come into such general use that there can no longer be any doubt of its practical value. Most of the large cities of the country and hundreds of smaller communities are now using the disinfection process with entire satisfaction. It is so economical and so simple to install and to operate and furnishes such assurance of freedom from water-borne infection that its use should be encouraged whenever there is any possible doubt as to the sanitary character of the water supply.

There are few untreated water supplies in the United States today, except those taken from wells, which are so well protected that they do not at times show evidences of pollution. Whether the pollution is only remote and occasional or whether it is continued but only slight in amount, the installation of a disinfecting plant for continuous use or for use during danger periods represents a cheap insurance against epidemics. As an adjunct to filtration it furnishes an additional safeguard against occasional failure and often permits more rapid rates of filtration and important economics in the use of chemicals and in other ways.

The proper application to a water of the requisite quantities of this disinfectant will bring about a practically complete removal of pathogenic organisms without affecting the water to any noticeable extent. The disinfectant later undergoes a

chemical change whereby it is converted into perfectly harmless substances normally present in most natural waters. To secure this result, however, it is necessary to apply the proper quantity of disinfectant in the proper way. Too little hypochlorite gives imperfect disinfection, while an excess will produce an unpleasant taste in the water. If the flow of water by the point of application is subject to wide fluctuations, some adjustment of the rate of application is necessary. Finally most waters undergo seasonal changes in their chemical composition and accordingly require a variation in the dosage, the latter being determined to a large extent by the chemical character, of the water."

The first hypochlorite plant in the state was installed in April, 1913, at the Great Falls City Water Works, by the city engineer. The second plant was put in at the Boston and Montana Smelter to treat the water furnished from the Missouri River to residents of Little Chicago after a typhoid epidemic. The Montana Water Company at Billings adopted the plan in May, 1913, and have equipped a laboratory for making frequent tests of the efficiency of the plant. In May, 1914, the city of Chinook installed a plant for disinfecting the Milk River water used for domestic purposes. The indications are that these disinfection plants are working satisfactorily and making the water treated safer for domestic use. A plant has been installed by the Livingston Water Company, to be put in operation when it seems necessary.

Water and Ice Supplied by Interstate Carriers.

Water supplied to passenger trains in Montana is taken by the railroad companies from water systems at twenty-nine stations in the state and ice is placed in the drinking water containers of passenger coaches at seven stations. Water used for drinking on passenger trains operated in interstate traffic must be furnished under certain regulations which are given below:

"On January 25, 1913, the Secretary of the Treasury, under authority of an act of Congress, approved February 15, 1893, promulgated the following regulation regarding the water and ice furnished to passengers by common carriers in interstate traffic:

Amendment to Interstate Quarantine Regulations.

Article 3, General Regulations, is hereby amended by the addition of the following paragraph:

Paragraph 15. Water provided by common carriers on cars, vessels, or vehicles operated in interstate traffic for the use of passengers shall be furnished under the following conditions:

"(a) Water shall be certified by the State or municipal health authority within whose jurisdiction it is obtained as incapable of conveying disease; Provided, that water in regard to the safety of which a reasonable doubt exists may be used if the same has been treated in such manner as to render it incapable of conveying diseases, and the fact of such treatment is certified by the aforesaid health officer.

"(b) Ice used for cooling such water shall be from a source the safety of which is certified by the State health authority within whose jurisdiction it is obtained, and before the ice is placed in the water it shall be first carefully washed with water of known safety and handled in such manner as to prevent its becoming contaminated by the organisms of infectious or contagious diseases; Provided, that the foregoing shall not apply to ice which does not come in contact with the water which is to be cooled.

"(c) Water containers shall be cleaned and thoroughly scalded with live steam at least once in each week they are in operation."

Many requests have been received from common carriers for instructions as to how the requirements of the regulation can best be fulfilled. Therefore, for the information of those concerned the following instructions have been drafted:

Instructions Relative to the Certification of the Water and Ice Furnished to Passengers in Interstate Traffic.

Samples of water and artificial ice from each and every source of supply should be subjected to bacteriological and chemical examination at least once in every six months by the proper state or municipal health authority within whose jurisdiction the supply is obtained, or by other person or persons competent to make such examinations and whose results will be accepted by the State or municipal health authority whose duty it is to issue certificates. Each new crop of natural ice should be examined and certified before use.

The common carrier desiring a certificate of the state or municipal health authority within whose jurisdiction the water or ice is obtained should make application therefor.

After the necessary examinations shall have been made the certificate should be issued on the form which is appended, one copy to be delivered to the common carrier, one copy to be forwarded to the Surgeon General, United States Public Health Service, Washington, D. C., and one copy to be retained as a matter of record and for future reference.

Whenever there is an unusual prevalence of typhoid fever, dysentery, infantile diarhoea, or other water-borne disease in a locality from which common carriers receive water and ice, an additional examination of the water and ice should be made and a supplemental certificate made by the proper certifying authority and forwarded as above.

The Secretary of the State Board of Health has followed the above regulations and the laboratory has made the necessary analyses. In a few instances only has it been necessary to refuse to give the necessary certificate. At some points the certificate has been issued after certain suggestions for improving sanitary conditions around the source of supply had been carried out. The large majority of the water supplies used by Montana interstate carriers on passenger trains for drinking is above suspicion from the sanitary aspect.

Montana Sewage Experiment Station.

The second annual meeting of the Montana Society of Municipal Engineers held in Great Falls, last January, was attended by representatives of the State Board of Health, who took part in a general discussion of methods of sewage disposal and the prevention of the pollution of rivers and waterways. The discussion ended with the passage of a resolution by the society favoring the organization of a sewage experiment station to study methods of sewage disposal and treatment suitable to conditions in Montana, and to study the question of the pollution of rivers and waterways in the state.

The authority to establish an experiment station of this kind is given to the State Board of Health in Section 1570, of the Revised Codes of Montana, which reads as follows:

Section 1570. Establishment of Experimental Stations: "That in order that the State Board of Health, may at all times be prepared to give the best advice to cities, towns, public institutions or private corporations relative to the prevention or removal of pollutions of water, said Board is hereby authorized to establish and maintain an experimental station

for the purpose of studying the best methods of preventing pollution of water, and said Board is authorized to cause sanitary methods and systems in use outside of the State of Montana to be investigated and studied with a view of ascertaining their fitness for conditions in this State."

It was apparent that there were not enough funds available to properly design, construct, operate and test the efficiency of a suitable experimental plant so it was decided to request the co-operation and assistance of various departments of the Montana State College and the city of Bozeman where the plant is located. As a result an organization on a co-operative basis has been made and the staff is composed of the following members:

Dr. W. F. Cogswell, Secretary, Montana State Board of Health, Executive Officer.

W. M. Cobleigh, Chemist in charge of efficiency tests.

D. B. Swingle, Bacteriologist in charge of disinfection tests.

F. C. Snow, Engineer in charge of design and construction.

Carl Widener, City Engineer in charge of operation.

W. B. Vestal, Operating Engineer.

Carl Gottschalck, Assistant Chemist.

Otto Batch, Assistant in Bacteriology.

Under the agreement the cost of construction of the experimental plant has been assumed by the State Board of Health, the expense of operating and sampling is to be paid by the city of Bozeman. The laboratory tests required to determine the efficiency of the methods of sewage treatment installed are to be done in the bacteriological and chemical laboratories of the Montana State College, where the regular work in water and sewage testing is done for the Board of Health under a special appropriation from the state.

The experimental plant has been installed by Professor F. C. Snow, of the Civil Engineering Department of the college and consists of screens, a septic tank, contact and sprinkling filters and sand filters which will be operated in various combinations. A disinfection apparatus for handling calcium hypochlorite will soon be installed.

The plant is now in operation under the direction of Mr. Widener and Mr. Vestal, and the laboratory tests have been started.

The efficiency of the different methods and combinations of methods of sewage purification as determined by the rapidity with which they destroy the bacteria will be studied by Professor D. B. Swingle. From the data thus obtained it may be possible to draw conclusions as to the best means of protecting some of the smaller streams of the state from excessive contamination, by disinfecting or purifying the raw sewage, sewage effluent, etc.

The units of the experimental plant will be used in various combinations and the effluents studied from the chemical standpoint by Professor W. M. Cobleigh and Mr. Gottschalck. The usual chemical tests of sewage will be made including oxygen demand, and putresibility. In addition to the above it is the plan to study the method of simple screening and disposal by dilution in the East Gallatin river.

The results of the experiments together with the conclusions warranted will be published as a joint report of the State Board of Health. It also is a part of the plan to formulate general policies that can govern the treatment and disposal of sewage in Montana.

It is hoped that these policies can be formulated in such a way as to be acceptable to the State Health Officials and that their adoption will be effective in establishing a workable plan in this important matter of the proper disposal of city sewage. The object in view is to protect the rivers and waterways in the state from excessive pollution in order that water purifying plants located on these rivers may not have excessive burdens thrown upon them.

TABLE NO. V.

GARDINER & YELLOWSTONE RIV

Lab. No.	Description	Date	Solids
1160	Yellowstone River above Gardiner River	8–27–12	...
1161	Gardiner River at mouth	8–27–12	...
1162	Yellowstone River at new intake	9– 6–12	...
1856	Town tap	5– 7–13	196
1857	Tank, town tap	5– 8–13	...
1858	Yellowstone River, new intake	5– 7–13	141
1864	Yellowstone River, new intake	5–16–13	93
1865	Tap at pumps	5– 7–13	98
1888	Gardiner River at mouth	5–22–13	222
1889	Yellowstone River, new intake	5–22–13	140
1890	Tap at pumps	5–22–13	114
1891	Town tap	5–22–13	106
2897	Yellowstone River, new intake	3–31–14	206
2898	Town tap	3–31–14	208
3025	Yellowstone River, new intake	4–21–14	155
3026	Town tap	4–21–14	189
3460	Gardiner River, at Fort Yellowstone	7–22–14	122
3461	Gardiner River at Fort Yellowstone	7–22–14	122
3462	Yellowstone River at new intake	7–22–14	59
3463	Gardiner River at mouth	7–22–14	229
3464	Town tap	7–22–14	60

TABLE NO. V.

ERS & GARDINER TOWN SUPPLY.

Nitrogen as			Nitrogen as			Bacteriological Examination	
Free Ammonia	Albuminoid Ammonia	Nitrites	Nitrates	Oxygen Consumed	Chlorine	B. Coli	Gas in Lactose bile.
0.032	0.028	0.0073	trace	1.00	6.62	Negative	
0.012	0.024	0.0000	trace	0.95	22.65	Negative	
0.02	0.036	0.0012	trace	1.00	13.23	Negative	
0.048	0.12	0.003	0.04	2.43	9.6	Negative	
.....	.....	.....	....	....	.....	Negative	
0.048	0.126	0.003	0.02	2.22	6.11	Negative	
0.06	0.094	0.001	0.04	3.5	3.6		
0.048	0.117	0.0005	0.04	3.05	3.6		
0.02	0.088	0.0000	trace	2.55	11.2	Negative	
0.05	0.116	0.0025	trace	3.15	3.6	Negative	
0.058	0.099	0.0015	trace	3.05	4.07	Negative	
0.04	0.111	0.0005	trace	2.95	3.8	Negative	
0.048	0.044	0.0016	0.2	1.75	18.3	Positive	
0.087	0.043	0.005	0.2	1.5	12.4	Positive	
0.049	0.045	0.009	0.3	3.15	8.9	Negative	
0.038	0.097	0.001	0.3	2.40	10.6	Negative	Negative
0.022	0.034	0.0000	0.06	1.30	5.45		Positive
0.038	0.093	0.0000	0.10	1.05	5.45		Positive
0.030	0.071	0.0015	0.08	1.50	6.44		
0.030	0.042	0.0000	0.08	1.10	19.3		Negative
0.034	0.059	0.0010	0.08	1.20	6.44		Negative

TABLE NO. V (CONTINUED).

YELLOWSTONE RIVER AND

No. Lab.	Description	Date	Solids
31	Intake	8–28–09	136
33	City tap	8–28–09	159
59	City tap		153
73	Intake	10–22–09	149
74	City tap	10–22–09	161
82	Intake	11–11–09	163
83	City tap	11–11–09	174
102	City tap	1–22–10	392
117	City tap	2– 4–10	
124	Intake	2–14–10	187
126	City tap	2–14–10	188
163	Intake	3–16–10	154
164	City tap	3–16–10	170
199	Intake	4–26–10	115
200	City tap	4–26–10	156
316	Intake	7–13–10	
362	Intake	7–22–10	130
791	Pumps	6–12–12	180
1770	Pumps	4–14–13	254
1772	Above intake	4–14–13	381
1937	City tap	6 –3–13	
2064	Intake	6–28–13	220
2065	Pumps	6–28–13	154
2124	Intake	7–15–13	199
2125	Pumps	7–15–13	144
2206	Pumps	7–29–13	118
2207	Intake	7–29–13	141
2293	Intake	8–16–13	119
2294	Pumps	8–16–13	104
2377	Intake	8–23–13	114
2378	Pumps	8–23–13	120
2379	Intake	9– 2–12	126
2380	Pumps	9– 2–13	126
2420	Pumps	9– 8–13	122
2421	Intake	9– 8–13	122
2477	Intake	9–17–13	114
2478	Pumps	9–17–13	110
2502	Intake	10– 1–13	
2503	Pumps	10– 1–13	
2507	Intake	9–23–13	126
2508	Pumps	9–23–13	130
2635	Pumps	10–27–13	160
2636	Intake	10–27–13	160
2637	City tap	10–27–13	...
2638	City tap	10–28–13	...
2670	Pumps	11–24–13	180
2669	Intake	11–24–13	184
2868	City tap	3– 6–14	164
2871	Spring Creek	.....	...
2872	Spring Creek	3– 9–14	...
2886	Intake	3–23–14	190
2887	Pumps	3–23–14	125
2892	Intake	3–27–14	184
2893	Pumps	3–27–14	...
2894	Intake	3–30–14	174
2895	Pumps	3–30–14	182
3019	Intake	4–14–14	196
3020	Pumps	4–14–14	196
3023	Intake	4–20–14	192
3024	Pumps	4–20–14	170
3027	Intake	4–23–14	172
3028	Pumps	4–23–14	216
3043	Intake	4–28–14	128
3044	Well	4–28–14	132
3045	Pumps	4–28–14	...

TABLE NO. V (CONTINUED).

LIVINGSTON CITY WATER.

Nitrogen as		Nitrogen as				
Free Ammonia	Albuminoid Ammonia	Nitrites	Nitrates	Oxygen Consumed	Chlorine	Bacteriological Examination
0.03	0.11	0.0000	0.000	....	7.1	No sample.
0.03	0.06	0.0000	0.11	....	7.1	No sample.
0.00	0.04	Trace	0.11	.....	8.5	No sample.
0.05	0.10	0.0045	0.067	.....	9.7	No sample.
0.04	0.03	Trace	0.114	.....	10.4	No sample.
0.08	0.05	0.0045	0.09	.....	11.0	No sample.
0.06	0.03	0.0030	0.113	.....	11.0	No sample.
0.03	0.03	0.0000	0.180	.....	0.5	No sample.
0.05	0.02	0.0000	0.200	0.45	11.3	No sample.
0.14	0.04	0.0018	0.114	1.40	11.0	No. B. Coli.
0.075	0.025	0.0018	0.200	.....	11.0	No. B. Coli.
0.050	0.090	0.0030	0.18	0.9	12.0	No. B. Coli.
0.010	0.065	0.0006	0.27	0.7	11.0	No. B. Coli.
0.070	0.140	0.0048	0.067	.....	4.5	No sample.
0.040	0.06	0.0000	0.23	.....	7.0	No sample.
0.045	0.01	0.0020	0.045	1.4	6.6	No sample.
0.026	0.119	0.003	0.068	2.15	6.5	B. Coli.
0.016	0.098	0.0000	0.14	3.45	11.2	No sample.
0.072	0.36	Trace	0.10	3.87	10.7	No. B. Coli.
0.076	0.40	Trace	0.14	3.91	10.7	No. B. Coli.
0.000	0.123	0.0033	0.6	3.20	2.55	
0.026	0.15	0.002	Trace	0.8	2.04	B. Coli.
0.022	0.048	0.0000	0.4	1.55	5.6	No. B. Coli.
0.032	0.125	0.002	Trace	0.75	7.13	B. Coli.
0.02	0.114	0.0000	0.2	1.40	6.1	B. Coli.
0.046	0.133	0.0000	0.2	1.25	5.09	No B. Coli.
0.02	0.16	Trace	0.06	2.10	4.84	No sample.
0.076	0.17	Trace	Trace	3.45	6.11	No sample.
0.032	0.10	0.0000	0.00	1.30	6.11	No sample.
0.013	0.056	0.0000	0.00	2.5	4.1	No sample.
0.024	0.047	0.0000	0.00	0.9	6.11	No sample.
0.114	0.058	0.0000	0.00	1.25	7.64	No sample.
0.053	0.05	0.0000	0.00	0.70	7.64	No sample.
0.018	0.05	0.0000	0.10	1.25	4.07	No sample
0.026	0.089	0.0000	0.05	1.25	7.13	No sample
0.012	0.04	0.0000	0.00	1.05	8.14	No sample.
0.024	0.048	0.0300	0.06	1.35	8.14	No sample.
Trace	0.064	0.0000	0.00	1.25	7.10	B. Coli.
0.000	0.048	0.0000	0.08	1.15	7.10	B. Coli.
0.032	0.111	0.0000	0.00	1.40	7.13	No sample
0.042	0.07	0.0000	0.06	1.90	7.13	No sample.
0.012	0.076	0.0000	0.04	1.40	9.16	No B. Coli.
0.012	0.064	0.001	0.08	1.10	9.16	No B. Coli.
0.012	0.072	Trace	0.04	1.25	9 16	No B. Coli
0.012	0.072	Trace	0.04	1.00	9.16	No B. Coli.
0.024	0.048	Trace	0.20	3.50	12.7	No B. Coli. No Gas.
0.024	0.048	0.0005	0.08	3.3	13.2	No B. Coli. No Gas.
0.028	0.054	0.0000	0.14	1.63	12.4	No sample.
.....	.....	.....	.....	.....	.....	Gas.
.....	.....	.....	.....	.....	.....	Gas.
0.012	0.016	0.002	0.04	2.3	10.9	No B. Coli. No Gas.
0.032	0.028	Trace	0.2	1.35	10.9	No B. Coli. No Gas.
0.064	0.106	0.002	0.12	2.00	12.4	No B. Coli. No Gas.
0.012	0.024	Trace	0.20	1.88	12.4	No B. Coli. No Gas.
0.013	0.048	0.002	0.02	2.10	12.4	No B. Coli.
0.006	0.02	Trace	0.14	1.25	12.4	B. Coli.
0.014	0.07	0.001	0.02	1.80	11.9	B. Coli. Gas.
0.014	0.036	Trace	0.1	1.2	11.9	B. Coli. Gas.
0.013	0.094	0.001	0.2	2.60	11.4	B. Coli. Gas.
0.011	0.016	0.000	0.28	1.20	11.4	B. Coli. Gas.
0.013	0.043	Trace	0.06	3.65	8.4	B. Coli. Gas.
0.067	0.074	0.000	0.12	2.25	9.41	B. Coli. Gas.
0.038	0.048	0.001	0.1	4.05	8.41	B. Coli. Gas.
0.008	0.032	0.000	0.3	2.75	8.90	B. Coli. Gas.
.....	.....	.....	.....	.....	.....	B. Coli. Gas.

TABLE NO. V (CONTINUED).

YELLOWSTONE RIVER AND LIVINGSTON

No. Lab.	Description	Date	Solids
3046	Pumps	4-28-14	166
3047	Tap	4-28-14	...
3048	Tap	4-28-14	166
3049	Intake	4-28-14	128
3062	Intake	5- 5-14	134
3063	Well	5- 5-14	160
3064	Pumphouse	5- 5-14	...
3065	Tap	51 5-14	...
3066	Intake	5- 6-14	116
3067	Pumps	5- 5-14	151
3098	Tap	5- 6-14	...
3099	Tap	5- 6-14	...
3100	Tap	5- 6-14	...
3107	Intake	5-13-14	90
3108	Well	5-13-14	140
3109	Tap	5-13-14	...
3110	Tap	5-13-14	...
3111	Tap	5-13-14	...
3118	Intake	5-20-14	72
3119	Pumps	5-20-14	128
3120	Tap, east side	5-20-14	...
3121	Tap, north side	5-20-14	...
3122	Tap, west side	5-20-14	...
3179	Intake	6- 9-14	94
3180	Pumps	6- 9-14	120
3181	Tap, east side	6- 9-14	...
3182	Tap, north side	6- 9-14	...
3183	Tap, west side	6- 9-14	...
3319	Intake	6-30-14	56
3320	Pumps	6-30-14	59
3321	Tap, east side	6-30-14	...
3322	Tap, north side	6-30-14	...
3323	Tap, west side	6-30-14	...
3364	Intake	7- 9-14	82
3365	Pumps	7- 9-14	74
3366	Tap, east side	7- 9-14	...
3367	Tap, north side	7- 9-14	...
3368	Tap, west side	7- 9-14	...
3455	Intake	7-22-14	93
3456	Pumps	7-22-14	91
3457	Tap, east side	7-22-14	...
3458	Tap, north side	7-22-14	...
3459	Tap, west side	7-22-14	...
3617	Intake	8-11-14	92
3618	Pumps	8-11-14	120
3619	Tap, east side	8-11-14	...
3620	Tap, north side	8-11-14	...
3621	Tap, west side	8-11-14	...
4023	Intake	8- 2-14	152
4024	Pumps	10- 2-14	164
4025	Tap, west side	10- 2-14	...
4026	Tap, east side	10- 2-14	...
4027	Tap, north side	10- 2-14	...

TABLE NO. V (CONTINUED).

CITY WATER (CONTINUED).

Nitrogen as						
Free Ammonia	Albuminoid Ammonia	Nitrites	Nitrates	Oxygen Consumed	Chlorine	Bacteriological Examination
0.001	0.034	0.000	0.3	2.55	8.90	No B. Coli. No Gas.
.....	.....	.....	.....	.....	.....	No B. Coli. Gas.
0.008	0.04	0.000	0.3	2.75	8.90	No B. Coli. Gas.
0.01	0.05	0.000	0.1	3.75	8.4	No sample.
Trace	0.166	Trace	Trace	4.65	6.93	B. Coli. Gas.
Trace	0.036	0.000	0.02	1.50	8.4	B. Coli. Gas.
.....	.....	.....	.....	.....	.....	No B. Coli. Gas.
.....	.....	.....	.....	.....	.....	No B. Coli. No Gas.
0.042	0.157	Trace	Trace	4.05	9.41	B. Coli. Gas.
0.02	0.095	0.000	0.2	1.85	9.41	No B. Coli. No Gas.
.....	.....	.....	.....	.....	.....	No B. Coli. No Gas.
.....	.....	.....	.....	.....	.....	No B. Coli. Gas.
.....	.....	.....	.....	.....	.....	No B. Coli. No Gas.
0.01	0.103	Trace	Trace	3.65	4.46	B. Coli. Gas.
0.008	0.044	0.0000	0.16	1.75	8.91	No B. Coli. No Gas.
.....	.....	.....	.....	.....	.....	No B. Coli No Gas.
.....	.....	.....	.....	.....	.....	No B. Coli. No Gas.
.....	.....	.....	.....	.....	.....	No B. Coli. No Gas.
0.034	0.15	Trace	0.14	3.75	4.46	B. Coli. Gas.
0.07	0.068	0.0000	0.16	1.80	6.43	No B. Coli. No Gas.
.....	.....	.....	.....	.....	.....	No B. Coli No Gas.
.....	.....	.....	.....	.....	.....	No B. Coli. Gas.
.....	.....	.....	.....	.....	.....	No B. Coli. Gas.
0.048	0.190	0.0000	1.04	3.00	4.46	B. Coli. Gas.
0.025	0.060	0.0000	0.42	1.25	4.46	No B. Coli. No Gas.
.....	.....	.....	.....	.....	.....	No B. Coli. No Gas.
.....	.....	.....	.....	.....	.....	No B. Coli. No Gas.
.....	.....	.....	.....	.....	.....	No B. Coli. No Gas.
0.036	0.102	Trace	Trace	1.40	4.5	No B. Coli. Gas.
0.031	0.056	0.0000	0.20	1.35	4.95	No B. Coli. Gas.
.....	.....	.....	.....	.....	.....	No B. Coli. No Gas.
.....	.....	.....	.....	.....	.....	No. B. Coli. Gas.
.....	.....	.....	.....	.....	.....	No. B. Coli. Gas.
0.027	0.037	Trace	0.10	1.25	5.69	No. B. Coli. Gas.
0.025	0.037	0.0900	0.14	0.75	6.44	B. Coli. Gas.
.....	.....	.....	.....	.....	.....	B. Coli. Gas.
.....	.....	.....	.....	.....	.....	No B. Coli. No Gas.
.....	.....	.....	.....	.....	.....	No B. Coli. No Gas.
0.022	0.077	0.0000	0.08	2.00	6.44	Gas.
0.031	0.093	0.0000	0.14	1.60	6.44	Gas.
.....	.....	.....	.....	.....	.....	No B. Coli. No Gas.
.....	.....	.....	.....	.....	.....	No B. Coli. No Gas.
.....	.....	.....	.....	.....	.....	No B. Coli. No Gas.
0.014	0.092	0.0011	0.06	1.05	6.40	No B. Coli. No Gas.
0.014	0.073	0.0000	0.06	1.05	7.9	No B. Coli. Gas.
.....	.....	.....	.....	.....	.....	No B. Coli. Gas.
.....	.....	.....	.....	.....	.....	No B. Coli. No Gas.
.....	.....	.....	.....	.....	.....	No B. Coli. No Gas.
0.024	0.100	Trace	0.00	1.45	7.95	No B. Coli. No Gas.
0.028	0.061	0.0000	0.30	0.90	7.95	No B. Coli. No Gas.
.....	.....	.....	.....	.....	.....	No B. Coli. No Gas.
.....	.....	.....	.....	.....	.....	No B. Coli. No Gas.
.....	.....	.....	.....	.....	.....	No B. Coli. No Gas.

TABLE NO. V (CONTINUED).

COLUMBUS CITY

Parts per

Lab. No.	Description	Date	Solids
2829	Yellowstone River at Columbus	10–21–13	156
2830	City tap in school house	2–13–14	246
2831	City tap in residence of Dr. W. P. Smith	2–13–14	...
2832	City tap in residence of N. P. Adams	2–13–14	...
2833	City tap in store of J. B. Annin	2–13–14	...
2834	Yellowstone River, center of stream	2–13–14	198
2835	Yellowstone River, 200 feet above Columbus	2–13–14	200
2836	Tap in Pump House	2–13–14	190
2858	Pumps	2–25–14	214
2859	Tap in school house	2–25–14	218

TABLE NO. V (CONTINUED).

WATER SUPPLY.
Million.

Nitrogen as		Nitrogen as				Bacteriological Examination	
Free Ammonia	Albuminoid Ammonia	Nitrites	Nitrates	Oxygen Consumed	Chlorine	B. Coli	Gas in lactose bile
0.018	0.046	0.0000	0.0000	3.10	6.11		
0.018	0.03	Trace	0.15	.....	11.7	Negative	Negative
.....	.....	.....	.....	.....	.....	Negative	Negative
.....	.....	.....	.....	.....	.....	Negative	Negative
.....	.....	.....	.....	.....	.....	Negative	Negative
0.022	0.022	0.001	0.04	.....	11.7	Negative	Positive
0.035	0.058	0.001	0.04	.....	11.7		
0.03	0.022	0.001	0.08	.....	11.7		
0.012	0.02	Trace	0.08	1.35	11.2	Negative	Negative
0.012	0.024	Trace	0.10	1.05	11.2	Negative	Negative

TABLE NO. V (CONTINUED).

YELLOWSTONE

No. Lab.	Description	Date	Parts per Solids
39	At N. P. Intake	.....	164
80	At N. P. Intake	12-10-19	322
93	One-half mile above R. R. bridge on Rocktork Br..	12-31-09	152
94	50 feet below intake pipe	12-30-09	424
105	300 feet above bridge, Rock Fork Branch	1-22-10	157
106	600 feet below bridge, middle of river	1-22-10	170
107	600 feet below bridge, slough flows along shore	1-22-10	377
154	Above bridge on Rocky Fork	3-12-10	316
157	Intake at N. P. Pumping Station	3-12-10	396
170	At county bridge 40 feet from south shore	3-26-10	255
171	200 feet above bridge, south shore	3-26-10	204
172	At county bridge, 40 feet from north shore	3-26-10	214
173	One and one-half miles below N. P. Pumping Station	3-26-10	201
224	At wagon bridge south bank	5-14-10	182
226	At N. P. intake near shore	5-14-10	176
229	At wagon bridge, south bank	5-16-14	148
230	At old intake, N. P. north bank	5-16-10	178
334	South bank, N. P. bridge	7-15-10	136
357	Intake below sheep camp and on same side of river	3-12-10	396
383	N. P. intake, middle of river	9-10-10	211
386	N. P. intake, near shore	9-17-10	230
390	At N. P. intake	9-20-10	224
457	200 feet above bridge on Rocky Fork, south bank..	12-28-10	222
458	Intake, 50 feet from shore	12-28-10	282
562	River at intake	6-13-11	150
1205	Tap at city pump house	9- 5-12	144
1206	Tap in Alden & Thoralson's store	9- 5-12	156
1207	Tap at High School building	9- 5-12	152
1208	Intake at river	9- 6-12	162
1209	N. P. pump house	9- 6-12	365
1210	Tap in company house	9- 6-12	502
1859	Pumps, N. P. pumping station	5- 7-13	535

TABLE NO. V (CONTINUED).

Million.

RIVER, LAUREL.

Nitrogen as		Nitrogen as				
Free Ammonia	Albuminoid Ammonia	Nitrites	Nitrates	Oxygen Consumed	Chlorine	Bacteriological Examination
0.03	0.17	Trace	None	.....	6.1	
0.16	0.09	0.0045	0.20	.....	13.5	
0.05	0.02	Trace	0.23	0.65	10.0	No B. Coli.
0.06	0.06	0.0045	0.36	0.85	13.0	Doubtful B. Coli.
0.055	0.04	0.003	0.181	0.9	9.0	
0.075	0.03	0.003	0.181	0.5	9.0	No B. Coli.
0.07	0.045	0.006	0.41	0.9	12.0	No B. Coli.
0.06	0.19	0.003	0.18	2.8	8.0	
0.06	0.24	0.0036	0.226	3.45	8.5	
0.025	0.075	0.0024	0.07	2.2	7.0	No B. Coli.
0.030	0.095	0.0021	0.045	2.1	6.7	No B. Coli.
0.025	0.075	0.0027	0.09	2.0	6.7	No B. Coli.
0.01	0.055	0.0018	0.07	2.6	6.7	No B. Coli.
0.05	0.13	0.0036	Trace	3.05	1.5	
0.03	0.17	0.003	Trace	2.9	2.5	
0.025	0.10	0.0018	Trace	not determin'd	2.0	
0.05	0.115	0.0024	Trace	.....	3.0	
None	0.035	None	0.045	1.4	7.13	B. Coli.
0.06	0.24	0.0036	0.226	3.45	8.5	
0.01	0.10	Trace	0.09	1.45	10.5	
0.04	0.08	0.0012	0.05	1.15	9.0	No B. Coli.
0.055	0.056	0.0006	0.045	.....	8.5	B. Coli.
0.014	0.022	0.0024	0.136	0.95	11.3	No B. Coli.
0.014	0.031	0.003	0.226	1.1	12.0	No B. Coli.
0.031	0.147	0.0024	0.068	4.15	1.53	
0.008	0.024	0.0000	2.48	1.35	6.108	No B. Coli.
0.008	0.024	0.0000	3.0	1.2	6.108	No B. Coli.
0.0096	0.0232	0.0000	5.6	1.4	6.108	B. Coli.
0.012	0.048	0.0018	Trace	1.45	7.126	B. Coli.
0.012	0.0488	0.0000	0.1	1.45	9.67	No B. Coli.
0.012	0.036	0.0000	0.1	1.35	11.2	No B. Coli.
0.016	0.088	0.0000	0.04	2.2	11.2	No B. Coli.

TABLE NO. V (CONTINUED). YELLOWSTONE RIVER AND

Parts per

Lab. No.	Description	Date	Solids
	City tap	3- 4-09	268
42	City tap	8-..-09	187
96	City tap	12-30-09	306
110	City tap	1-22-10	282
119	Intake	2- 9-10	317
120	Pumps	2- 9-10	304
121	City tap	2- 9-10	304
122	City tap	2- 9-10	312
140	Intake	3- 1-10	272
141	Pumps	3- 1-10	265
142	City tap	3- 1-10	264
159	Intake	3- 4-10	302
160	Pumps	3- 4-10	262
161	City tap	3- 4-10	268
206	Intake	5- 4-10	193
207	Pumps	5- 4-10	180
208	City tap	5- 4-10	170
336	Bridge above intake	7-18-10	164
337	Intake	7-18-10	148
338	City tap	7-18-10	182
381	City tap	9-11-10	274
426	Intake	10-30-10	322
427	City tap	10-30-10	326
436	Intake	12-14-10	333
438	City tap	12-14-10	328
451	City tap	12-28-10	...
453	City tap	12-28-10	...
598	Intake	12- 7-11	318
599	City tap	12- 7-11	318
601	Intake	12-15-11	310
602	City tap	12-15-11	313
1752	Intake	3-26-13	379
1753	Pumps	3-26-13	353
1754	City tap	3-26-13	338
1842	Intake	4-30-13	...
1843	Pumps	4-30-13	...
1844	City tap	4-30-13	...
2018	Intake	6-25-13	...
2019	Pumps	6-25-13	...
2631	Intake	10-23-13	248
2632	Tap, west side	10-23-13	260
2633	Tap, down town	10-23-13	260
2660	City tap	.....	...
2655	City tap	11-12-13	...
2657	Tap in Babcock building	11-13-13	...
2663	City tap	11-19-13	...
2664	City tap	11-19-13	...
2678		12- 5-13	270
2694	Intake	12-18-13	285
2695	Pumps	12-18-13	280
2696	City tap	12-18-13	260
2756	Pumps	1-20-14	322
2757	City tap	1-20-14	380
2755	Intake	1-20-14	303
2818	Intake	2-10-14	470
2819	Intake	2-10-14	422
2820	City tap	2-10-14	420
2823	Intake	.....	...
2824	Pumps	.....	...
2825	City tap	.....	...
2899	Intake	4- 1-14	336
2900	City tap	4- 1-14	320
3112	Intake	.....	...
3113	Tap	.....	...
3125	Intake	.....	...
3126	City tap	.....	...
3164	Intake	6- 5-14	850
3165	Pumps	6- 5-14	...
3166	Tap	6- 5-14	120
3574	Pumps	7-30-14	160

BILLINGS CITY WATER. TABLE NO. V (CONTINUED).

Million.

Nitrogen as		Nitrogen as				
Free Ammonia	Albuminoid Ammonia	Nitrites	Nitrates	Oxygen Consumed	Chlorine	Bacteriological Examination
0.070	0.08	0.0000	0.181	.....	9.27	
0.02	0.08	Trace	0.045	.....	6.1	
0.06	0.03	Trace	0.226	0.83	9.5	
0.06	0.05	0.0024	0.248	0.5	8.5	No B. Coli.
0.045	0.055	0.0012	0.2938	1.0	10.0	B. Coli.
0.055	0.04	0.0015	0.294	0.9	9.5	No B. Coli.
0.045	0.065	0.0015	0.316	0.65	9.5	No B. Coli.
0.05	0.03	0.0018	0.339	0.65	9.3	No B. Coli.
0.03	0.07	0.003	0.361	1.2	9.0	No B. Coli.
0.05	0.05	0.003	0.361	0.9	9.5	No B. Coli.
0.025	0.05	0.0015	0.497	0.95	9.5	No B. Coli.
0.06	0.19	0.0024	0.271	2.35	8.0	
0.1	0.10	0.0024	0.271	1.9	7.5	
0.06	0.12	0.0018	0.271	1.9	7.5	
0.035	0.09	0.0018	Trace	2.3	3.1	No B. Coli.
0.045	0.085	0.003	Trace	2.65	2.0	No B. Coli.
0.04	0.09	0.0006	Trace	2.35	2.0	No B. Coli.
0.022	0.24	Trace	0.045	1.4	5.09	B. Coli (1450 per cc)
0.037	0.173	Trace	0.019	1.4	5.09	B. Coli.
0.022	0.14	0.0003	0.007	1.4	5.09	
0.08	0.12	0.0015	0.181	1.4	10.5	
0.015	0.053	0.0009	0.271	0.9	9.0	
0.015	0.037	0.0018	0.271	0.85	9.0	B. Coli.
0.013	0.079	0.0024	0.271	1.45	10.0	
0.008	0.049	0.0021	0.294	1.1	10.0	
0.015	0.035	0.0018	0.294	1.35	11.3	
0.017	0.038	0.003	0.271	1.1	10.8	
0.032	0.085	0.0018	0.249	0.9	8.65	No B. Coli.
0.012	0.073	0.0009	0.249	0.95	9.2	No B. Coli.
0.067	0.16	0.0018	0.23	0.8	10.18	B. Coli.
0.066	0.13	0.0048	0.23	0.65	9.16	No B. Coli.
0.06	0.25	0.0000	0.4	3.05	10.18	No B. Coli.
0.06	0.14	0.0000	0.4	1.13	10.7	No B. Coli.
0.088	0.112	0.0000	0.35	0.91	10.43	No B. Coli.
0.02	0.094	0.0000	Trace	1.83	5.1	No B. Coli.
0.008	0.084	Trace	Trace	2.00	5.1	No B. Coli.
0.021	0.089	0.0000	Trace	1.87	5.3	No B. Coli.
0.024	0.16	Trace	Trace	3.00	1.02	
0.024	0.14	0.0000	0.00	1.80	1.0	
0.028	0.153	0.0005	0.05	1.0	6.60	No B. Coli. No gas.
0.03	0.16	Trace	0.06	1.4	6.60	No B. Coli. No gas.
0.028	0.163	Trace	0.06	1.4	6.6	No B. Coli. No gas.
	.....	.....	.....	.....	.....	No B. Coli. No gas.
	.....	.....	.....	.....	.....	No B. Coli. No gas.
	.....	.....	.....	.....	.....	No B. Coli. No gas.
	.....	.....	.....	.....	.....	No B. Coli. No gas.
	.....	.....	.....	.....	.....	No B. Coli. No gas.
0.012	0.07	None	0.3	1.4	8.14	No B. Coli. No gas.
0.000	0.045	0.0005	0.02	1.25	9.7	No B. Coli. No gas.
0.000	0.048	Trace	Trace	1.75	9.7	No B. Coli. No gas.
0.000	0.026	0.0000	0.08	1.7	9.7	No B. Coli. No gas.
0.028	0.024	None	0.4	0.8	8.7	No gas.
Trace	0.032	0.0000	0.48	1.25	11.2	No gas.
0.02	0.032	Trace	0.3	1.75	5.6	No gas.
0.07	0.061	0.005	0.5	0.65	12.72	No B. Coli. No gas.
0.026	0.05	0.0000	0.45	0.65	12.2	No B. Coli. No gas.
0.02	0.043	0.0000	0.40	0.19	11.7	No B. Coli. No gas.
	.....	.....	.....	.....	.....	No B. Coli. No gas.
	.....	.....	.....	.....	.....	No B. Coli. No gas.
	.....	.....	.....	.....	.....	No B. Coli. No gas.
0.009	0.039	0.0000	0.16	1.75	11.4	No B. Coli. No gas.
0.000	0.07	0.0000	0.16	1.50	10.9	No B. Coli. No gas.
....	.....	.....	.....	....	.....	B. Coli. Gas.
....	.....	.....	.....	....	.....	No B. Coli. No gas.
....	.....	.....	.....	....	.....	Gas.
....	.....	.....	.....	....	.....	No gas.
0.017	0.19	Trace	0.08	6.20	2.48	
.....	.....	.....	.....	.....	.....	B. Coli. Gas.
0.014	0.083	0.0000	0.03	4.35	2.48	B. Coli. Gas.
0.042	0.043	0.0000	0.04	1.25	7.40	No B. Coli. No gas.

TABLE NO. V (CONTINUED).

HUNTLEY PRO

Lab. No.	Description	Date	Parts per Solids
3528	Yellowstone River above Billings, sewer outlet.....	7-29-14	143
3529	Main Huntley Ditch at Huntley.....	7-29-14	141
3533	Huntley Ditch, lateral D.....	7-29-14	196
3534	Huntley Ditch, lateral D.....	7-29-14	159
3535	Huntley Ditch, Lateral C.....	7-29-14	160
3536	Main Huntley Ditch Osborn	7-29-14	170
3537	Yellowstone River, Huntley	7-29-14	158

LOGAN

Lab. No.	Description	Date	Parts per Solids
3608	Reservoir	8- 6-14	258
3609	Tap	8- 6-14	236
3610	Intake well	8- 6-14	240

TABLE NO. V (CONTINUED).

JECT DITCH.

Million.

Nitrogen as		Nitrogen as					
Free Ammonia	Albuminoid Ammonia	Nitrites	Nitrates	Oxygen Consumed	Chlorine	Bacteriological B. Coli.	Description Gas in lactose bile
0.070	0.056	0.0000	0.02	1.70	6.93	Positive	Positive
0.032	0.058	0.0000	0.16	1.20	6.93	Positive	Positive
0.050	0.308	Trace	Trace	2.45	6.93	Positive	Positive
0.013	0.046	0.0000	0.04	0.65	6.93	Negative	Negative
0.013	0.036	0.0000	Trace	2.10	6.93	Positive	Positive
0.014	0.050	Trace	Trace	1.45	6.93	Positive	Positive
0.016	0.054	Trace	Trace	1.40	6.93	Positive	Positive

Million.

Nitrogen as		Nitrogen as				Bacteriological Examination	
Free Ammonia	Albuminoid Ammonia	Nitrites	Nitrates	Oxygen Consumed	Chlorine	B. Coli.	Gas in lactose bile.
0.094	0.174	0.0000	0.02	1.50	13.4	Negative	Positive
0.025	0.112	0.0000	0.04	1.20	13.4	Negative	Negative
0.139	0.052	0.0000	0.04	1.60	13.4	Negative	Positive

TABLE NO. V (CONTINUED).

MISSOURI RIVER AND

Parts per

Lab. No.	Description	Date	Solids
3128	Missouri river at intake	5–23–14	124
3129	Tap	5–23–14	146
3389	Missouri River at intake	7–10–14	215
3390	Tap	7–10–14	220
3392	Missouri River at intake	7–10–14	...
3393	Tap, Trident Hotel	7–10–14	...
3611	Tap	8– 7–14	301
3612	Tap	8– 7–14	274

MISSOURI RIVER AND

Parts Per

Lab. No.	Description	Date	Solids
1766	City tap	4– 8–13	278
1773	Tap at pumps	4–14–13	212
1774	City tap	4–14–13	191
1848	Tap at pumps	5– 2–13	...
1849	Tap at pumps	5– 2–13	...
1869	Tap at pumps	5–22–13	370
1870	City tap	5–22–13	...
1871	City tap	5–22–13	...
1872	Tap at pumps	5–22–13	206
2688	Intake	2–17–13	270
2689	Tap at pumps	2–17–13	290
2690	City tap	2–17–13	290

TABLE NO. V (CONTINUED).

TRIDENT WATER WORKS.

Million.

Nitrogen as		Nitrogen as				Bacteriological Examination	
Free Ammonia	Albuminoid Ammonia	Nitrites	Nitrates	Oxygen Consumed	Chlorine	B. Coli.	Gas in lactose bile
0.04	0.106	Trace	Trace	3.35	2.48	Negative	Negative
0.022	0.054	0.0000	0.0000	1.80	6.93	Negative	Negative
0.143	0.108	0.0000	Trace	1.65	7.90	Positive	Positive
0.008	0.042	0.0000	0.23	0.85	8.9	Negative	Positive
.....	....	.....	.....	....	....	Positive	Positive
.....	....	.....	.....	....	....	Negative	Negative
Trace	0.04	0.0000	0.34	0.75	11.9	Negative	Negative
0.022	0.052	0.0000	0.34	1.00	11.9	Negative	Negative

GREAT FALLS CITY WATER.

Million.

Nitrogen as		Nitrogen as				Bacteriological Examination	
Free Ammonia	Albuminoid Ammonia	Nitrites	Nitrates	Oxygen Consumed	Chlorine	B. Coli.	Gas in lactose bile
0.016	0.13	0.012	0.1	1.26	15.27	Positive	
0.03	0.13	0.001	0.20	2.00	4.6	Negative	
0.05	0.26	0.009	0.28	3.6	8.7	Negative	
0.027	0.32	0.0000	0.02	4.7	6.6	Negative	
0.012	0.40	0.0000	0.02	4.7	6.6	Negative	
0.02	0.146	0.0000	Trace	4.25	5.09	Negative	
.....	.....	.....	.....	.....	.....	Negative	
.....	.....	.....	.....	.....	.....	Negative	
0.02	0.114	0.0000	Trace	3.85	4.8	Negative	Negative
0.024	0.10	0.0000	0.00	2.00	12.7		
0.123	0.14	0.0000	0.00	2.00	12.2		
Trace	0.052	0.0000	0.00	1.95	12.7	Negative	Positive

TABLE NO. V (CONTINUED).

MISSOURI RIVER AND LITTLE

Parts per

Lab. No.	Description	Date	Solids
1758	Missouri River, center of bridge, 15th St. Great Falls, above intake	4- 8-13	...
1759	Missouri River, 100 feet from north end of 15th St bridge, Great Falls	..... 4- 8-13	... ...
1763	Tap at pumps	4- 8-13	...
1846	Intake	4-30-13	...
1847	Tap at pumps	4-30-13	...
1862	Intake	5-15-13	...
1863	Town tap	5-15-13	...
1933	Little Chicago Supply tap at pumps	6- 4-13	...
1934	Little Chicago Supply, town tap	6- 4-13	...
2626	Intake	10-17-13	...
2691	Intake	12-17-13	292
2692	Tap at pumps	12-17-13	286
2693	Tap at pumps	12-17-13	292

MILK RIVER AND

Lab. No.	Description	Date	Solids
1630	100 yards below Havre Sewage Outlet	1- 8-13	...
1629	15 miles west of Chinook	1- 8-13	...
1628	13½ miles west of Chinook	1- 8-13	...
1625	10 miles west of Chinook	1- 8-13	...
1624	6 miles west of Chinook	1- 8-13	...
1622	1½ miles west of Chinook	1- 8-13	...
1620	Intake Chinook water plant	1- 8-13	794
2875	Intake Chinook water plant	3-11-14	492
2879	Intake Chinook water plant	3-11-14	608
2880	Intake Chinook water plant	3-13-14	646
2882	Intake Chinook water plant	3-14-14	836
3137	Intake Chinook water plant	5-25-14	432

TABLE NO. V (CONTINUED).

CHICAGO WATER SUPPLY.

Million.

Nitrogen as		Nitrogen as				Bacteriological Examination	
Free Ammonia	Albuminoid Ammonia	Nitrites	Nitrates	Oxygen Consumed	Chlorine	B. Coli.	Gas In Lactose Bile
0.03	0.14	0.009	0.12	2.04	13.8	Positive	
0.028	0.14	0.004	0.05	2.87	11.96	Positive	
0.02	0.10	0.001	0.1	1.65	11.7	Positive	
0.024	0.166	0.0000	Trace	3.18	4.07	Positive	
0.028	0.138	0.0000	0.02	3.1	4.6	Negative	
0.016	0.18	0.0000	0.00	2.5	3.6	Negative	
0.016	0.20	0.0000	0.00	2.6	3.6	Negative	
.....	.....	.....	.....	.....	.....	Positive	
.....	.....	.....	.....	.....	.....	Positive	
.....	.....	.....	.....	.....	.....	Negative	
0.032	0.127	0.0000	0.20	1.95	11.2	Negative	Negative
Trace	0.84	0.0000	0.05	2.05	10.2		
0.123	0.044	0.0000	0.00	1.75	11.2	Negative	Positive

CHINOOK CITY WATER.

Nitrogen as		Nitrogen as				
Free Ammonia	Albuminoid Ammonia	Nitrites	Nitrates	Oxygen Consumed	Chlorine	Bacteriological Examination
.040	.360	0.0008	Trace	5.05	13.23	B. Coli.
.200	.106	0.0006	Trace	3.70	13.23	B. Coli.
.064	.165	0.0002	Trace	4.63	11.20	B. Coli.
.123	.103	0.0002	Trace	3.85	11.20	B. Coli.
.178	.035	0.0002	Trace	7.80	12.21	B. Coli.
.114	.159	0.0002	Trace	4.37	13.74	B. Coli.
.123	.106	0.0050	Trace	3.24	14.25	No B. Coli.
.064	.023	None	0.14	13.60	4.95	B. Coli.
.060	.180	Trace	.012	9.20	4.95	B. Coli.
.120	.310	0.001	.016	16.60	3.96	B. Coli.
.160	.720	0.001	Trace	13.85	3.96	B. Coli.
.530	.615	None	None	3.80	6.44	B. Coli.

TABLE NO. V (CONTINUED).

ALHAMBRA

Lab. No.	Description	Date	Parts per Solids
2202	Hot Spring, Alhambra	7–24–13	1024
3056	Warm Spring Creek, ¼-mile above Alhambra Hotel	4–30–14	90
3051	Prickley Pear Creek, ¼-mile above Alhambra Hotel	4–30–14	148
3060	Effluent Septic Tank, Alhambra Hotel	4–30–14	936
3059	Effluent Septic Tank, Sunnyside Hotel	4–30–14	868
3054	Tap in G. N. Lunch Counter, Clancy	4–30–14	216
3055	Tap in Roundhouse, at Clancy	4–30–14	222

DEER LODGE CITY

Lab. No.	Description	Date	Parts per Solids
278	City tap	7– 5–10	...
2533	City tap	9–26–13	210
2771	City tap	1–28–14	230
3152	Cottonwood Creek just above Bagg's Creek	6– 2–14	88
3153	Cottonwood Creek, intake City Water Works	6– 2–14	74
3154	Small creek just below Emery	6– 2–14	...
3155	Small branch below ranch on Bagg's creek	6– 2–14	...

TABLE NO. V (CONTINUED).

AND CLANCY
Million.

Nitrogen as						Bacteriological Examination	
Free Ammonia	Albuminoid Ammonia	Nitrites	Nitrates	Oxygen Consumed	Chlorine	B. Coli	Gas in lactose bile
0.016	0.069	0.0000	0.00	0.65	20.4	Negative	
0.012	0.041	0.0070	0.30	3.65	2.48	Negative	Negative
Trace	0.030	0.0100	0.10	3.50	0.50	Negative	Negative
0.38	0.300	0.0010	0.08	3.80	21.3	Positive	Positive
2.67	0.800	0.0000	0.04	18.65	5.94	Positive	Positive
0.006	0.070	0.012	0.30	3.35	2.98	Positive	Positive
0.011	0.05	0.018	0.30	3.20	3.96	Positive	Positive

WATER AND COTTONWOOD CREEK.
Million.

Nitrogen as						Bacteriological Examination	
Free Ammonia	Albuminoid Ammonia	Nitrites	Nitrates	Oxygen Consumed	Chlorine	Gas in lactose bile	B. Coli.
.080	.100	.003	.20	4.1	7.5		
.092	.180	.000	.02	1.90	18.3		Negative
.020	.100	.000	.08	0.75	13.7	Negative	
.032	.048	.000	.04	2.90	3.96		
.033	.120	.000	.02	2.85	2.48	Negative	Negative
.....	.....	.....	.....	.....	.....	Negative	Negative
.....	.....	.....	.....	.....	.....	Negative	Negative

TABLE NO. V (CONTINUED).

PIPESTONE CREEK AND N.

Lab. No.	Description	Date	Solids
2891	Tap in roundhouse	3-26-14	231
3156	Pipestone Creek just above Pipestone Springs	6- 2-14	135
3157	Pipestone Creek one mile below Pipestone Springs	6- 2-14	...
3158	Pipestone creek intake N. P. water system	6- 2-14	200
3159	Tap in Roundhouse	6- 2-14	246

BOULDER.RIVER AND

Parts per

Lab. No.	Description	Date	Solids
2026	City tap	6-25-13	57
3191	City tap	6-12-14	96
3192	Northern Pacific Water Works	6-12-14	...
3398	Boulder River, 3 miles above intake	7-14-14	47
3399	Boulder River, 1 mile above intake	7-14-14	49
3400	Boulder River, 1,000 feet above intake	7-14-14	...
3401	Boulder River, 300 feet above intake	7-14-14	...
3402	Boulder River, intake	7-14-14	48
3403	Intake reservoir	7-14-14	...
3404	City tap	7-14-14	74
3405	City tap	7-14-14	84
3716	Intake reservoir	8-21-14	168
3717	Intake reservoir	8-21-14	162
3718	Boulder River, below Sypher's	8-21-14	...
3719	Boulder River, 300 yards above intake	8-21-14	160
3720	Boulder River, 1½ miles above intake	8-21-14	168
3721	Boulder River, 3 miles above intake	8-21-14	160
3722	Boulder River, 3½ miles above intake	8-21-14	...
3723	City tap	8-21-14	166
3724	City tap	8-21-14	...
3725	Northern Pacific Water Works	8-21-14	190

TABLE NO. V (CONTINUED).

P. RY. SUPPLY, WHITEHALL.

Nitrogen as		Nitrogen as				Bacteriological Examination	
Free Ammonia	Albuminoid Ammonia	Nitrites	Nitrates	Oxygen Consumed	Chlorine	B. Coli.	Gas in lactose bile
Trace	.186	.0000	.02	4.10	8.40	Positive	Positive
.042	.200	.0000	.02	3.95	3.96	Positive	Positive
.....	.....	.....	.....	.....	.....	Positive	Positive
.064	.195	.0000	.02	4.40	14.35	Positive	Positive
.034	.106	.0000	.04	3.75	10.90	Positive	Positive

BIG TIMBER CITY WATER.
Million.

Nitrogen as		Nitrogen as				Bacteriological Descriptio	
Free Ammonia	Albuminoid Ammonia	Nitrites	Nitrates	Oxygen Consumed	Chlorine	B. Coli.	Gas in lactose bile
0.028	0.064	0.0000	0.00	1.55	0.00	Negative	
0.027	0.093	0.0000	0.18	2.00	1.99		Positive
.....	.....	.....	.....	.....	.....		Positive
0.02	0.363	0.0000	Trace	0.2	0.99	Negative	Positive
0.036	0.133	0.0000	Trace	0.75	0.99	Negative	Negative
.....	.....	.....	.....	.....	.....	Negative	Positive
.....	.....	.....	.....	.....	.....	Positive	Positive
0.022	0.026	0.0000	0.02	1.15	0.99	Negative	Negative
.....	.....	.....	.....	.....	.....	Negative	Positive
0.024	0.026	0.0000	0.10	1.5	0.99	Negative	Positive
0.242	0.070	0.0000	0.06	1.00	0.99	Negative	Negative
0.068	0.133	0.0000	0.15	0.95	1.14	Positive	Positive
0.032	0.100	0.0000	0.20	1.15	1.14	Negative	Negative
.....	.....	.....	.....	.....	.....	Positive	Positive
0.046	0.052	0.0000	0.18	1.15	1.14		Positive
0.032	0.054	0.0000	0.18	0.95	1.14	Negative	Positive
0.036	0.052	0.0000	0.20	0.95	1.14	Negative	Negative
.....	.....	.....	.....	.....	.....	Negative	Negative
0.034	0.068	0.0000	0.26	0.75	1.14	Negative	Negative
.....	.....	.....	.....	.....	.....	Negative	Negative
0.022	0.051	0.0000	0.24	0.85	1.14	Negative	Positive

TABLE NO. V (CONTINUED).

LEWISTOWN

Lab. No.	Description	Date	Parts per Solids
2765	City tap	1–24–14	374
2863	Big Spring	3– 2–14	295
2864	Middle Spring	3– 2–14	402
2865	Upper Spring	3– 2–14	402

DARBY.

Lab. No.	Description	Date	Parts per Solids
3344	Well, W. T. See	7– 3–14	38
3345	Well, J. P. White	7– 3–14	26
3346	Tin Cup Creek	7– 3–14	14
3347	Darby Hotel, well	7– 3–14	48
3348	Well, James Strange	7– 3–14	100
3349	Priscilla Hotel well	7– 3–14	79

TABLE NO. V (CONTINUED).

CITY WATER

Million.

Nitrogen as		Nitrogen as				Bacteriological Examination	
Free Ammonia	Albuminoid Ammonia	Nitrites	Nitrates	Oxygen Consumed	Chlorine	B. Coli.	Gas in lactose bile.
0.000	0.035	0.0000	0.22	0.10	1.00		
0.011	0.012	0.0000	0.02	0.90	1.02		
0.012	0.012	0.001	0.02	0.95	1.53		
0.013	0.013	0.001	0.02	1.05	2.54		

Million.

Nitrogen as		Nitrogen as				Bacteriological Examination	
Free Ammonia	Albuminoid Ammonia	Nitrites	Nitrates	Oxygen Consumed	Chlorine	B. Coli.	Gas in lactose bile.
0.022	0.07	0.0000	0.714	1.35	2.97	Positive	Positive
0.028	0.055	0.0000	0.40	0.70	2.97	Negative	
0.015	0.041	0.0000	0.000	1.30	3.96	Negative	
0.012	0.024	0.0000	1.000	0.45	5.45	Positive	Positive
0.008	0.019	0.0000	0.80	0.75	3.96	Negative	
0.022	0.044	0.0000	0.20	1.00	4.95	Negative	

TABLE NO. V (CONTINUED).

HARLOWTON

Lab. No.	Description	Date	Parts per Solids
2504	City reservoir	10- 1-13	1072
2547	City reservoir	10- 8-13	....
2619	City tap	10- 9-13	....
2620	City tap	10-11-13	....
2652	City well	11- 8-13	....
2653	Reservoir	11- 8-13	....
2679	Reservoir	12- 8-13	1022
2680	City well	12- 8-13	1008
3196	City tap	6-12-14	....
3198	Reservoir	6-12-14	....

MOORE

Lab. No.	Description	Date	Parts per Solids
3408	City well	7-15-14	227
3407	Conrad	7-15-14	297
3410	H. B. Holbrook	7-15-14	288
3411	Frank Bucklow	7-15-14	246
3412	H. D. Power	7-15-14	224
3413	H. E. Strong	7-15-14	241
3414	H. C. Redmman	7-15-14	257
3343	W. F. Sharp	7-13-14	670
3539	W. F. Sharp	7-29-14	775
3538	E. D. Hedrick	7-29-14	317
3540	S. T. Dotson	7-29-14	263

TABLE NO. V (CONTINUED).

CITY WATER.
Million

Nitrogen as		Nitrogen as				Bacteriological Examination	
Free Ammonia	Albuminoid Ammonia	Nitrites	Nitrates	Oxygen Consumed	Chlorine	B. Coh.	Gas in lactose bile.
0.11	0.13	0.002	0.00	1.4	8.1	Positive	
.....	.....	.....	.....	.....	.....	Positive	
.....	.....	.....	.....	.....	.....	Positive	
.....	.....	.....	.....	.....	.....	Positive	
.....	.....	0.0000	.....	.....	.....	Negative	Negative
.....	.....	0.0000	.....	.....	.....	Negative	Positive
0.114	0.044	0.003	Trace	1.70	7.1	Negative	Negative
0.235	0.037	0.008	Trace	1.25	10.7	Negative	Negative
.....	.....	.....	.....	.....	.....	Negative	Negative
.....	.....	.....	.....	.....	.....	Negative	Negative

WELLS.
Million.

Nitrogen as		Nitrogen as				Bacteriological Examination
Free Ammonia	Albuminoid Ammonia	Nitrites	Nitrates	Oxygen Consumed	Chlorine	Gas in lactose bile.
0.026	0.151	0.0000	1.10	0.00	5.94	Negative
0.0210	0.070	Trace	0.90	3.25	11.4	Negative
1.333	0.089	1.8000	0.60	2.00	16.8	Negative
0.32	0.121	Trace	1.20	0.25	7.43	Negative
0.038	0.049	Trace	1.10	0.00	6.44	Negative
0.038	0.16	0.0158	0.40	0.80	5.45	Positive
0.056	0 057	Trace	1.20	0.60	8.41	Negative
0.026	0.099	0.008	16.66	4.10	43.07	
0.024	0.051	0.0002	7.20	0.75	45.0	Negative
0.056	0.145	Trace	1.70	1.60	23.8	Negative
0.018	0 042	Trace	1.70	0.80	7.9	Negative

TABLE NO. V (CONTINUED).

WHITEHALL

Parts per

Lab. No.	Description	Date	Solids
3753	H. Schmidt	8–27–14	600
3754	C. J. Pruitt	8–27–14	530
3755	W. P. Green	8–27–14	416
3756	Scott Borden	8–27–14	406
3757	C. J. Pruitt	8–27–14	302
3758	White Hotel	8–27–14	502
3759	H. Schmidt	8–27–14	515
3774	A. A. Marsh	9– 3–14	360
3775	A. J. Needham	9– 3–14	560
3776	J. E. Pace	9– 3–14	806
3777	J. J Snyder	9– 3–14	946
3778	L. R. Packard	9– 3–14	445

HAVRE CI

Parts Per

Lab. No.	Description	Date	Solids
2087	City tap	7– 2–13	871
2874	City tap	3–11–14	792
3102	City tap	5– 8–14	670
3262	G. N. Tank, City and Ry. water	6–26–14	802
3771	G. N. Wells	9– 1–14	912
3772	G. N. Wells	9– 1–14	916
3773	City tap	9– 1–14	712

TABLE NO. V (CONTINUED).

WELLS.
Million.

Nitrogen as		Nitrogen as				Bacteriological Examination	
Free Ammonia	Albuminoid Ammonia	Nitrites	Nitrates	Oxygen Consumed	Chlorine	B. Coli.	Gas in lactose bile.
0.022	0.028	0.0000	0.70	0.60	57.9	Negative	Positive
0.052	0.056	0.0000	0.80	0.60	49.4	Negative	Negative
0.012	0.048	Trace	0.60	0.25	37.5	Negative	Negative
0.012	0.046	0.0000	1.10	0.55	39.8	Negative	Negative
0.019	0.048	0.0000	1.40	0.30	19.9	Negative	Negative
0.028	0.046	0.0000	0.70	0.60	43.2	Negative	Negative
0.016	0.050	Trace	0.80	0.55	39.8	Negative	Positive
0.035	0.026	0.0000	0.50	1.10	22.15	Negative	Negative
0.210	0.096	0.0015	1.80	2.90	29.5	Negative	Negative
Trace	0.044	0.0000	0.70	0.70	59.07	Negative	Positive
0.092	0.205	0.0030	1.60	3.05	48.8	Negative	Negative
0.043	0.032	0.0000	0.90	0.30	30.7	Negative	Negative

TY WATER.
Million.

Nitrogen as		Nitrogen as				Bacteriological Examination	
Free Ammonia	Albuminoid Ammonia	Nitrites	Nitrates	Oxygen Consumed	Chlorine	B. Coli	Gas in lactose bile
0.012	0.068	Trace	0.28	2.20	30.5	Negative	
0.012	0.024	0.0000	0.10	1.35	22.8	Negative	Negative
0.05	0.103	0.0009	0.40	0.75	7.92		
0.027	0.151	0.0000	0.80	6.50	20.3	Negative	Positive
0.008	0.034	Trace	1.10	1.05	21.01	Negative	Negative
0.024	0.049	0.0000	1.10	0.85	20.7	Negative	Negative
0.009	0.048	0.0000	0.44	0.55	12.5	Negative	Negative

TABLE NO. V (CONTINUED).

BAK

Lab. No.	Description	Date	Parts per Solids
2661	Well, Thos. S. Crow	11–17–13	274
2698	Well, Townsite Company	12–20–13	1168
2699	Well, town supply, owned by Emil Veryon	12–20–13	1176
2700	Baker Lake	12–20–13	1400
2708	Well, J. E. Warren	12–31–13	2240
2862	Well, E. J. Hinman	2–27–14	811
3022	Well, W. H. Young	4–14–14	952
3030	Well, Baker School District No. 12	4–24–14	994

CHOTEAU.

Lab. No.	Description	Date	Parts per Solids
2701	Well, Choteau Drug Co.	12–20–13	288
2702	Well, J. Baart	12–22–13	368
2703	Spring, Cowgill Addition	12–22–13	260
2704	Well, Julius Hershbery	12–22–13	364
3169	Spring, Perry	6– 6–14	266
3170	Spring, William Cowgill	6– 6–14	306
3171	Well, Mrs. Carroll Burbank	6– 6–14	474
3172	Well, Wm. Hodgskiss	6– 6–14	421

TABLE NO. V (CONTINUED).

ER
Million.

Nitrogen as		Nitrogen as				Bacteriological Examination	
Free Ammonia	Albuminoid Ammonia	Nitrites	Nitrates	Oxygen Consumed	Chlorine	B. Coli.	Gas in lactose bile.
0.016	0.010	0.0000	0.00	1.35	1.53	Negative	Negative
0.133	0.06	0.0000	0.04	2.00	16.3	Positive	Positive
0.166	0.082	0.0000	Trace	1.65	6.6	Negative	Negative
0.084	0.18	0.0000	Trace	3.4	9.7		Positive
1.000	0.072	0.0005	Trace	4.03	8.65		Negative
0.018	0.027	0.0040	1.2	2.55	5.1	Negative	Negative
0.667	0.076	0.0000	Trace	2.85	4.46	Negative	Negative
0.53	0.03	0.0000	0.02	2.45	7.2	Negative	Negative

Million.

Nitrogen as		Nitrogen as				Bacteriological Examination	
Free Ammonia	Albuminoid Ammonia	Nitrites	Nitrates	Oxygen Consumed	Chlorine	B. Coli.	Gas in lactose bile.
0.009	0.04	0.0000	0.04	0.75	3.1	Negative	Negative
0.02	0.024	0.0000	0.000	0.75	1.5	Negative	Negative
0.039	0.022	0.0000	0.04	0.95	1.53	Negative	Negative
0.042	0.008	0.0000	0.04	0.75	4.6	Negative	Negative
0.025	0.047	Trace	0.06	0.60	2.00	Negative	Negative
0.044	0.048	Trace	0.016	0.30	1.50	Negative	Negative
0.444	0.046	0.0000	0.00	0.40	8.40	Negative	Negative
0.186	0.043	0.0005	Trace	0.40	5.45	Negative	Negative

DIVISION OF FOODS AND DRUGS.

D. L. Weatherhead, Analyst.

Fourteen hundred and fifty-four samples were reported to the Secretary of the State Board of Health during the biennial period, 1913 and 1914. They may be classified as follows:

Material.	No. of samples legal.	No. of samples illegal.	No. of samples unoff.	Total No. of samples.
Butter	10	17	34	61
Candy	12	2	1	15
Cream	61	25	17	103
Ice Cream	18	6	1	25
Lard	3	1	1	5
Milk	453	324	157	934
Oleomargarine	1	....	....	1
Soft Drinks	142	55	2	199
Miscellaneous	77	27	7	111
	777	457	220	1454

Official samples	1234.	
Unofficial samples	220.	
Official samples, legal	777	58.8%
Official samples, illegal	457	41.2%

Each class of products listed above will be discussed more in detail later in the report. It may be interesting to observe in passing, however, that eleven hundred twenty-three samples or about seventy-seven and two-tenths per cent may be classed as dairy products; one hundred ninety-nine samples or about thirteen per cent as soft drinks; fifteen samples or about one per cent as confectionery; five samples or about one-third of one percent as meat products and the other one hundred twelve or about seven percent as miscellaneous products consisting in part of groceries and in part of samples of a very diverse nature.

It has been the custom to concentrate on one line of products at one time. Dairy products and soft drinks have been the products concentrated upon at various times. Each

year there has been a campaign on milk in particular, samples having been received from nearly every town in the state. In this way a general survey of the milk situation in the state was obtained.

In the case of soft drinks samples from each manufacturer of soda water in the state were sent in by inspectors at various intervals. A knowledge of the conditions of these products was thus obtained and the manufacturers were checked up in respect to the manner in which they had observed suggestions from the Board of Health.

As it is the object in this report to present the results of the laboratory in as brief and concise a manner as possible only a short discussion of each class of products will be given below in explanation of the results tabulated.

It will be noted throughout this report that the term "unofficial" is applied to the results of examination of a certain number of samples. In cases where the data furnished by analysis of a sample could not be used in court, the results are marked unofficial. This is also true of samples sent to the laboratory by parties other than inspectors and for samples used for experimental purposes.

Full reports of all official samples have been published in the monthly Board of Health Bulletins.

Dairy Products.

With the State Dairy Commissioner a rather complete survey of the condition of dairy products in the state was made. This tabulation contains a report of only those samples taken by the Board of Health.

Samples of butter, cream, and ice cream were taken, only occasional samples here and there. In the case of butter it was found that a considerable proportion of the samples were misbranded as to their net content. A large proportion also was found to be below the legal standard in butter fat. It is required by law that butter contains not less than 82½ percent of fat and not over sixteen percent moisture. This standard was not reached in forty-four percent of the samples analyzed. Thirty of thirty-one unofficial samples were used in an experiment concerning the shrinkage of butter on storage.

In the case of cream as in the case of butter it was found that a considerable proportion of the samples were not up to the legal standard in butter fat. The law requires a fat con-

tent of not less than twenty percent. In about thirty percent of the samples analyzed a lower quantity of fat was found.

In the case of ice cream the law requires a fat content of fourteen percent in ordinary ice cream, and a fat content of twelve percent in fruit and nut ice creams. In twenty-five percent of the samples examined a less amount of butter fat was found; the samples comprising the remaining seventy-five percent were up to the standard.

Samples of milk made up the largest number of all samples of dairy products taken. Almost every town in the state was inspected as to its milk supply. The law requires that milk contain at least three and one-fourth percent of milk fat and not less than eight and one-half percent of solids not fat, and that it be free from preservatives of any kind. About thirty-eight per cent of the samples examined gave results not complying with these standards. In the majority of cases there was a deficiency of milk fat. The most remarkable deficiency of this nature occurred in a sample obtained in Columbia Falls. This sample contained only two-tenths of one percent of fat and in addition was watered. The public has a right to expect three and one-fourth percent of fat. In a considerable number of cases there was a deficiency in solids not fat while the percentage of fat was above standard. A very large proportion of these samples was obtained in Butte and also a few in Great Falls. It seems that in these cases cream had been added to a watered milk in order to bring the fat content up to standard. As this practice appeared largely in restaurants and mostly in the same city it seemed that it was probably a wilful practice with the object of attempting to deceive a health officer especially since in some cases the percentage of solids was very low and of fat abnormally high thus giving a proportion between fat and solids not fat that could be accounted for in no other way.

There was also a large number of samples in which both fat and solids not fat were below the standard.

In one campaign in Great Falls in June, 1914, it was found that samples of milk taken from dairymen, with slight exceptions tested up to the standard while a large proportion of samples taken from restaurants selling milk they had procured from these same dairymen showed tests below standard. Proceedings were brought against five of these restaurant keepers

on this ground and fines were imposed by the justice court in that city in all five proceedings.

In twelve instances formaldehyde was detected in milk samples. One of these cases occurred in the city of Deer Lodge and the other eleven in a set of samples collected in Butte. Nine prosecutions based on the samples collected in Butte were instituted in the justice court in that city and nine convictions were returned.

Of course all dairy products, in addition to complying with these legal requirements as to quality must also be clean and wholesome, free from dirt, and other impurities and must be produced in sanitary surroundings and handled in a cleanly manner and produced only from healthy cows during the proper period of lactation. The health requirement of the cow includes that she be free from tuberculosis.

All the work incident to enforcing these provisions is done by sanitary inspection of the premises and veterinary inspection of the cows and the laboratory while being on the lookout for uncleanliness made no special efforts towards this kind of inspection and reported only the more conspicuous cases.

A tabulation of the data obtained in examining each division of dairy products is given below:

MILK.

Town.	Legal.	Illegal.	Unofficial.	Total.
Anaconda	7	11	....	18
Belfrey	1	....	....	1
Big Sandy	5	....	....	5
Big Timber	3	....	....	3
Billings	39	20	1	60
Boulder	....	....	5	5
Bozeman	33	7	....	40
Bridger	15	1	....	16
Butte	35	107	3	145
Carter	1	....	....	1
Chester	....	....	3	3
Chinook	9	2	5	16
Choteau	....	....	9	9
Coburg	....	....	1	1
Columbia Falls	1	1	2	4
Conrad	7	3	....	10
Cut Bank	6	8	....	14
Deer Lodge	5	7	....	12
Dillon	7	2	1	10
Dodson	....	....	1	1
Eureka	1	1	6	8
Floweree	2	....	....	2
Forsyth	3	2	....	5
Fort Benton	....	....	6	6
Fromberg	14	1	....	15
Glasgow	11	8	3	22
Glendive	16	9	11	36
Great Falls	28	30	8	66
Hamilton	17	4	5	26
Hardin	5	....	....	5
Harlem	3	1	6	10
Harlowton	10	....	5	15
Havre	2	9	13	24
Helena	44	6	10	60
Hysham	3	1	....	4
Joliet	5	....	....	5
Kalispell	8	6	13	27
Laurel	6	....	....	6
Lewistown	6	4	....	10
Libby	5	1	2	8
Livingston	32	4	....	36
Malta	8	2	....	10
Manhattan	2	....	....	2

MILK (Continued).

Town.	Legal.	Illegal.	Unofficial.	Total.
Miles City	4	3	15	22
Missoula	23	13	5	41
Mondak	2	3	....	5
Paradise	2	2	....	4
Philipsburg	10	2	....	12
Plains	8	5	....	13
Pony	4	....	2	6
Red Lodge	8	1	....	9
Ringling	1	....	....	1
Savoy	....	....	1	1
Shelby	9	1	1	11
Sheridan	12	3	....	15
Stevensville	....	....	2	2
Terry	1	1	5	7
Thompson	8	4	....	12
Three Forks	8	9	....	17
Twin Bridges ..	6	3	....	9
Valier	10	1	....	11
Victor	2	1	....	3
Virginia City ...	15	3	....	18
Wagner	....	....	1	1
Whitefish	4	3	10	17
Whitehall	10	1	....	11
White Sul. Spgs	2	2	....	4
Total.....	554	319	161	1034

Official samples	873	
Unofficial samples	161	
Official samples, legal.....	554	63.5%
Official samples, illegal	319	36.5%

CREAM.

Town.	Legal.	Illegal.	Unofficial.	Total.
Big Timber	2	....	....	2
Bozeman	2	1	....	3
Billings	8	2	....	10
Butte	....	1	....	1
Cascade	....	....	2	2
Choteau	....	....	1	1
Dillon	4	3	....	7
Dodson	....	....	1	1
Glasgow	....	....	4	4
Hamilton	1	....	....	1
Harlowton	1	1	....	2
Helena	8	....	4	12
Lewistown	1	2	....	3
Livingston	22	14	....	36
Miles City	4	....	....	4
Missoula	6	1	3	10
Roundup	....	....	1	1
Terry	....	....	1	1
Three Forks	1	....	....	1
Twin Bridges	1	....	....	1
Total	61	25	17	103

Official samples	86	
Unofficial samples	17	
Percentage of official samples legal.		70.2
Percentage of official samples illegal		29.8

All illegal samples were low in fat.

ICE CREAM.

Town.	Legal.	Illegal.	Unofficial.	Total.
Billings	3	....	....	3
Bozeman	4	1	....	5
Columbia Falls	....	....	1	1
Dillon	2	....	....	2
Glendive	2	....	....	2
Helena	4	1	....	5
Livingston	3	2	....	5
Miles City	....	1	....	1
Red Lodge	....	1	....	1
Total	18	6	1	25

Official samples	24	
Unofficial samples	1	
Official samples legal	18	75%
Official samples illegal	6	25%

All illegal samples were below standard in content of butter fat.

BUTTER.

Town	Legal	Misbranded	Adulterated	Both Misbranded and Adulterated	Unofficial	Total
Ballantine	.....	.....	.....	.....	1	1
Billings	2	1	.....	2	1	6
Bozeman	.....	.....	.....	.....	1	1
Butte	1	1	.....	1	30	33
Cut Bank	1	.....	.....	.....	.....	1
Dillon	1	.....	.....	.....	.....	1
Harlowton	2	.....	7	.....	.....	9
Lewistown	3	2	1	1	1	8
Red Lodge	.....	1	.....	.....	.....	1
Total	10	5	8	4	34	61

Official samples	27	
Unofficial samples	34	
Official samples, legal	10	37%
Official samples, illegal	17	63%
Official samples, adulterated	12	44%
Official samples, misbranded	9	33%

All misbranded samples were misbranded as to net content stated on the label.

All adulterated samples were below the legal standard in fat content.

Condensed Milk.

The quality of condensed milk in the State is of considerable importance on account of its almost exclusive use in place of fresh milk in some outlying localities. The samples analyzed did not show the product to be up to the required standards. There are no factories producing this product within the State so the consumer is entirely dependent upon outside manufacturers for this product.

Ice Cream Fillers.

Some ice cream fillers were sent into the laboratory for the purpose of receiving an opinion on the legality of their use. They were found to be composed chiefly of vegetable gums. The food law permits the use of gelatin in ice cream as a filler provided not more than .8 percent be used. The use of these vegetable gums such as tragacanth, gum arabic, etc., is not permitted.

Soft Drinks.

The other survey of food products covered bottled carbonated beverages put up in this state. Only the general provisions of the law apply to these products in respect to adulteration and misbranding. It is necessary that the product be wholesome, free from injurious substances, clean and free from dirt and contamination, produced from wholesome raw material and manufactured in a clean establishment by sanitary methods. In labeling the general provisions as to misbranding apply.

The use of saccharin was the subject dealt with in these cases and questions as to what constitutes an artificial and what an imitation product, the use of proper coloring matter, bacterial counts, foams, etc., were not considered as this field has not as yet been clearly defined.

It was found in 1912 that a large number or nearly all of the manufacturers of soft drinks were putting out products containing saccharin. In justice to these manufacturers it is fair to add that they were probably unaware of this as they used for sweetening and flavoring syrups that they had secured from other manufacturers. These syrups already contained the saccharin. After the manufacturers were duly informed by the Board of Health of this state of affairs they remedied the evil and the last set of samples taken did not show any manufacturers using this sweetner.

A few samples of other soft drinks were examined; chiefly boiled cider.

A tabulation of the data obtained in the examination of soft drinks is given below:

SOFT DRINKS.

Town	Legal	Misbranded	Adulterated	Misbranded and Adulterated	Unofficial	Total
Billings	11	1	.....	.....	.....	12
Bozeman	3	1	.....	.....	.....	4
Butte	44	1	38	.....	.....	83
Great Falls	43	5	5	.....	1	54
Helena	11	1	.....	.....	.....	12
Miles City	7	.....	.....	.....	1	8
Missoula	16	1	1	.....	.....	18
Red Lodge	7	1	.....	.....	.....	8
Total	142	11	44	.....	2	199

Official samples	197	
Unofficial samples	2	
Official samples, legal	142	72%
Official samples, illegal	55	28%
Official samples, adulterated	44	22%
Official samples, misbranded	11	5.6%

Of the adulterated samples thirty-six (36) contained saccharin and one salicyclic acid. Three were colored with non-permitted coal tar dyes and four purported to be champagne cider while they were merely sodas of apple flavor.

Among the samples counted as legal there were sixty-eight sold for a greater volume than the bottle contained; and among the samples marked illegal there were twenty-two (22) such cases.

LARD.

Lard is defined by the Montana Rules and Regulations as follows: "Lard is the rendered, fresh fat from hogs in good health at the time of slaughter, is clean, free from rancidity, and contains necessarily incorporated in the process of rendering not more than one percent of substance other than fatty acids and fat.

"Leaf lard is lard rendered at moderately high temperatures from the internal fat of the abdomen of the hog, excluding that adherent of the intestines, and has an iodine number not greater than sixty.

"Neutral lard is lard rendered at low temperatures."

As the definition implies lard is the fat of hogs separated by heat. When lard is produced on a small scale as in a butcher shop, the fat is rendered by heat directly or steam under pressure, in an open kettle. In large establishments the rendering is done in closed vats with steam under pressure.

The choicest lard is the leaf lard which is produced from the fat surrounding the kidneys. There is very little strictly pure leaf lard on the market as usually the mixed fats from various parts of the animal are rendered together.

The chief sophistications of lard are in the nature of frauds, little or no harmful ingredients being found except in cases where an unhealthy animal has been slaughtered.

At one time it was the practice to incorporate large enough quantities of moisture in the lard to materially lower its quality, but this adulteration at present is rarely if ever practiced. The foreign substances most usually found in lard are foreign fats and oils as beef fat, cotton seed oil or cotton seed stearine, corn oil, sesame oil and peanut oil. Of these beef fat and cotton seed products are by far the most usually found.

In connection with beef fat it may be mentioned that the addition of five percent beef stearine as a "stiffener" was at one

time advocated by the trade. Such mixture, is however, considered by food laws as an adulteration. In order to "stiffen" soft lard, lard stearine is now used.

Mixtures of lard and these foreign fats are properly called "compounds" or "lard substitutes," etc., and as such have a valuable place on the market, but it is a violation of the law to sell them as pure lard.

Five samples of lard were examined. One was found to contain beef fat. The other official samples were all right.

LARD.

Town.	Legal.	Illegal.	Unofficial.	Total.
Helena	....	1	....	1
Lewistown	3	....	....	3
Roy	....	....	1	1
Total	3	1	1	5

Official samples	4	
Unofficial samples	1	
Percnt of official samples, legal		75
Percent of official samples, illegal		25

CANDY.

The definition of the term "food" as used in the Montana Food and Drug Act includes confectionery. Therefore, the provisions of the law relating to foods in general apply to candy too. There is also the following regulation referring especially thereto:

"Candy is a product made from saccharine substance, or substances with or without the addition of harmless coloring, flavoring or filling materials, and contains no terra alba, barytes, talc, chrome yellow, or other mineral substances, or poisonous colorings or flavors, or other ingredients deleterious or detrimental to health, or any vinous malt, or spiritous liquor or compound or narcotic drug."

The manufacturing of candy represents a large and important industry. For years the consumption of candy has been constantly increasing due in part to an increased recognition of its value as a wholesome article of food and also in part, probably, to the improved quality and variety that has

been developed, especially in the chocolate industry. Formerly, candy was little eaten by adults and not nearly as constantly by children as now.

Candy is little adulterated with harmful substances. The use of mineral substances to color, coat, or size is practically discontinued. The use of deleterious substances as flavor or color is also rare.

Children as a rule buy the cheaper candies as they receive a larger amount for their money. Such goods are made largely with glucose, and sugar as sweetner and seldom contain harmful substances. Such deleterious substances as benzaldehyde in "peach" flavors and amylacetate in "banana" flavors are found at times, but usually in slight amounts so that sickness results only after eating large amounts. The acid flavors if eaten in relatively large amounts also cause "sour stomachs."

Probably the most dangerous adulteration, which is also found chiefly in cheap candies is the coating of candy with shellac, especially shellac containing arsenic. Of course, this is obviously deleterious though the amounts present might be so small as to make it necessary to eat a large amount before a fatal issue could arise from their cause. However, it is a harmful and uncalled for adulteration and not permissible.

Paraffine is also used in chocolate coatings, sometimes to make them stiffer. This is an adulteration as the paraffine may hinder digestion or at best is an inert substance and gives a deceptive stiffness to the coating.

The chief danger in the cheaper candies arises from unclean goods or such as have been handled or produced under unsanitary conditions. The dirt and dust which may collect on the candy, as well as any other food product, or which may be incorporated in it during handling may be a serious source of danger especially for infectious diseases. The handling which the child gives the candy is as important a factor as that which the dealer gives it and for that reason candies, made in the form of play things, etc., which are supposed to have a "duel" purpose, that of a plaything and confectionery are not desirable and their manufacture should be discouraged.

The more expensive candies, the chocolates and cream goods, are in general made of the best materials, high quality sugar being used with only enough glucose to prevent crystlization of the creams and fillings.

While candy is almost entirely free from harmful adulterations there are a few practices which are in the nature of slight deceptions. As candy is an entirely artificial product, the use of coloring can not be considered an adulteration if used for coloring puroses only and does not imitate any natural source of flavor or ingredients. If, however, coloring is used to imitate a natural fruit when the fruit itself can be used, there is deception, as in a "raspberry chocolate cream." The color of the "cream" should be derived from the color of the raspberry fruit which is ground and mixed with the "cream." If the flavor and color in such a product be artificial, the label should state the fact.

Some cheaper candies are made to imitate a chocolate product by using brown sugar and an artificial brown color, adding at times also cocoa butter. While these are sold at a price below that of chocolate goods, yet a certain deception is perpetrated.

Sometimes starch is used in gum drops in place of the gums or gelatin, which formerly were always used. This is also a deception.

While the deceptions are less serious than in other foods, and since candy is not a staple of the diet but used as a luxury, and therefore, if it pleases it serves its purpose as long as it is not harmful, yet they are, neverthless, deceptions and should not be practiced.

Candy, if it contains fruits and nuts, must be carefully protected from insects and unsanitary conditions or rancidity will devlop. They should also be protected from flies and dirt, otherwise they soon become insanitary and unwholesome.

It might be well for users of candy to remember that candy which is in itself wholesome as a food, is nevertheless a strong food stuff with a high nutritive value and if eaten at any and every time of the day has the same effect on general digestion as any other food eaten constantly, especially between meals.

Fifteen samples of candy were examined for unwholesome materials and the presence of harmful ingredients. In most cases each sample consisted of a very large number of various kinds of candy. The following tabulations show the nature of the samples. In the two illegal samples one kind of candy in each case was colored with non-permitted coal tar dye.

CANDY.

Town.	Legal.	Illegal.	Unofficial.	Total.
Elliston	1	1	....	2
Helena	9	1	1	11
Livingston	2	....	....	2
Total	12	2	1	15

Official samples 14
Unofficial sample 1
Official samples, legal..... 12 86%
Official samples, illegal..... 2 14%

Illegal samples were colored with non-permitted coal tar dyes.

Miscellaneous.

Other samples are put in a genral class and designated as miscellaneous. A large number of these samples were groceries. A systematic inspection of the grocery stores was made in several cities. The stocks on the shelves and in the warehouses were thoroughly looked over and a considerable number of samples taken. Part of these samples are included in this report.

Some of these miscellaneous products are worthy of a brief consideration.

Flavoring Extracts.

A few samples of flavoring extracts were examined. As far as quality is concerned they were found to be good extracts. Some faults in labelling appeared and these were pointed out for correction.

Preserving Compounds.

Several compounds sold in the state for use in preserving or pickling meats were sent to this laboratory for the purpose of obtaining an opinion on their use in meat packed for sale. We wish to encourage this practice as we prefer that a dealer find out from the Board of Health whether or not a preparation may be used legally rather than having him use it simply on the strength of the traveling salesman's word. In some cases the preservative was a harmless compound and in others it was found to contain harmful ingredients. It may not be

out of place to suggest that a dealer need not resort to buying his pickling substances that way for in case they are harmless they are such common substances as salt, salt petre, etc., and he can buy them in the open market just as well with less expense, while in case they are harmful or require special labelling by their use he not only jeopardizes the health of his customers but becomes liable to fine by state officials. In any case it is well for him to get the opinion of the Board of Health on a preparation before using it. It may be well to add also that these preparations are not always put up according to the same formula. At one time an article under a certain name will prove to be one thing and at another time something else. In general the use of these compounds is unnecessary and involves possibilities of suspicion and even arrest. We do not advise their use.

Coffee.

A considerable proportion of the brands of ground coffee sold in the state were examined. It was very gratifying to note that these were high in quality. In a few cases it was found that the weight of the package was incorrectly stated on the label though the quantity of variation was usually not large.

Oleomargarine.

One sample of oleomargarine, collected in Harlowton was examined. It was found to comply with the Standard; that is it was properly labelled, was up to weight and contained over 82½ percent of fat and less and 16 percent moisture.

Canned Sea Food.

A considerable number of samples of canned sea food were examined for preservatives and as to the condition of the can containing them. It was expected that a considerable portion might be found to contain preservatives and that in some cases the inside of the cans might be badly etched. It was a pleasure to note that this was not the case. In only one instance was a preservative detected. Formaldehyde was found in one sample and later in a second sample of the same goods from another shipment. In no case was an excessive quantity of tin discovered in the contents of any can.

Miscellaneous.

Material	Legal	Misbranded	Adulterated	Unofficial	Total
Blight Remedy	.....	.....	.....	1	1
Butter Milk	1	.....	.....	.....	1
Canned Goods	32	2	4	1	39
Catsup	1	.....	.....	.....	1
Chinese Sauce for Noodles	1	.....	.....	.....	1
Coffee	20	6	.....	.....	26
Coffee Compound	.....	1	.....	.....	1
Cheese	.....	.....	.....	1	1
Condensed Milk	.....	.....	4	.....	4
Flavoring Extract, Almond	.....	1	.....	.....	1
Lakota Flavoring Comp.	1	.....	.....	.....	1
Lemon	2	2	.....	.....	4
Lemon Substitute	1	.....	.....	.....	1
Vanilla	4	4	.....	.....	8
Ice Cream Fillers	.....	.....	2	.....	2
Marschino Cherries	1	.....	.....	.....	1
Potato Flour	.....	.....	1	.....	1
Powder for Worms	.....	.....	.....	1	1
Salt	1	.....	.....	.....	1
Syrup	1	.....	.....	.....	1
Skim Milk	2	.....	.....	.....	2
Freeze-em-Pickle	2	.....	.....	.....	2
Preservaline	1	.....	.....	.....	1
Special 77	1	.....	.....	.....	1
Salt	1	.....	.....	.....	1
Disinfectant	.....	.....	.....	1	1
Vinegar	3	.....	.....	.....	3
Worm Powder	1	.....	.....	1	2
Maple Sugar	.....	.....	.....	1	1
Total	77	16	11	7	111

Official samples	104	
Unofficial samples	7	
Official samples, legal	77	74%
Official samples, illegal	27	26%
Illegal samples, adulterated	11	10.6%
Illegal samples, misbranded	16	

This report of the work has been brief. If any one is interested in the individual samples a complete detailed report of them as stated before may be found in the Board of Health bulletin issued each month.